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ELECTIVE POLARITY,

THE

UNIVERSAL AGENT.

BY

FRANCES BARBARA BURTON,

AUTHORESS OF "ASTRONOMY FAMILIARIZED," "PHYSICAL ASTRONOMY," ETC.

> " Nihil est toto quod perstet in orbe."
> PYTHAGOREAN PHILOSOPHY.

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1845.

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ADDRESS TO THE READER.

BREVITY, AS WELL AS AVOIDANCE OF USELESS REPETITIONS, HAVING BEEN THE AUTHORESS'S AIM IN THIS TREATISE, THE FOLLOWING PREFACE IS PLACED BEFORE THE READER MERELY AS A PROGRAMME OF THE HYPOTHESIS AND CONSEQUENT SUBJECT-MATTER TO BE IMMEDIATELY OFFERED TO CONSIDERATION.

F. B. B.

ERRATA.

Page 120 (Note) line 3, *for* 763,000 *read* 886,149.

" " 4, *for* 480,000 *read* 473,694.

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ELECTIVE POLARITY

THE

UNIVERSAL AGENT.

PREFACE.

Astronomical calculations prove that *twelve thousand five hundred years ago,* Vega—the alpha star in the constellation Lyra—was the north polar star of the Earth :—and fossil remains everywhere testify the immense magnitude in organic scale, developed by the Occupiers of this planet, at some indefinitely remote period.

In these pages attention is sought to be directed to the following inquiry :—namely, whether analogy may not be traced, between the period of these gigantic organizations, and *that,* wherein a star of Vega's *polaric intensity,*—poured its magnetic streams throughout the Earth's planet?

This hypothesis is offered to attention, as grounded on the fundamental principle of all nature's operations:—namely, ROTATORY OSCILLATION. In other words, upon the alternations of maximum and minimum impetuses, which govern all Nature's works.—On this universal principle it is, that the above hypothesis assumes, the ORGANIZATIONS, as well as the *climates* of the Earth's planet, to be regulated by the *instrumentality of its polar revolutions.*

The importance and universality of this fundamental principle,—*rotatory oscillation,*—as well as the general laws of Elective Polarity, being dwelt on in the succeeding chapters, the reader shall not here be detained, by any enlargement upon their actions. He shall merely have the following remark placed before him, as briefly as possible.

It has long been regretted by the authoress, that a writer of Paley's celebrity should assert, towards the conclusion of his valuable work "Natural Theology,"* that "astronomy is NOT the best medium *through which* to prove the agency of an intelligent Creator;—the heavenly bodies," he says, "from remoteness and the simplicity of their appearance, not exhibiting the *complexity* which is necessary to deduce *design* from relation, aptitude, and correspondence of parts." "They do not," he adds further on, "*come within our mechanics.*" Thus depriving a valuable treatise of in fact its corner-stone demonstration; and rendering its conclusion, although abounding with master-strokes of morality, and piety, a feeble adjunct towards developing that *provisional Goodness*, which it is the professed purpose of the work to illustrate.

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* See Paley's Natural Theology, chap. xxii. p. 379.

This assertion from an able writer and orthodox divine like Paley, shows the mystification in which astronomy is involved, and the expediency of a more familiar development of its PRACTICAL LAWS. Because although this noble science enumerates among its professors the wisest, and most august of man's race; in the Pythagoras—the Arago—the Anaximander—the Copernicus—the Herschels—the Thales—the Kepler—the Galileo, of known time, yet none of these illustrious teachers,—except Pythagoras,—appear deducing, from ASTRONOMICAL FACTS, those MANIFESTATIONS of compensatory mitigation—provisional care,—immutable stability,—or of that *continuous unity of purpose maintained by minuteness of co-operative agencies*,—which mark the all-pervading government of a beneficent *Designer*, upholding VITALITY throughout his universe, by the most determinate, and immutable means. Manifestations unhappily obscured by the contradictory terms of technical phraseology, but which even a slight investigation into the practical laws of physical astronomy, render level to every capacity.

As Pythagoras alone seems directing attention to these mighty truths, the mutilation of his works is an irreparable loss, affording instances, no doubt, of the mysterious harmonies pervading nature, as these gradually unfolded themselves within his capacious mind.

Astronomy has hitherto been generally considered a mere complex, abstruse study, enveloped in geometrical diagrams, and algebraical definitions.—Its "explanations" (as they are called), being encumbered by contradictory terms,—denominated "SCIENTIFIC TECHNICALITIES,"—revolting to common sense, and rendering astronomy a dull, cold, *wonderful mystery,* unapproachable by ordinary minded, every-day people,—interesting to no one, —and consequently neglected by all!!

Whereas nothing comes *so home* to native feeling, as the consciousness afforded to each individual by the practical *laws of astronomy,*—that he,—*himself,* —forms a link,—an integral part,—of one mighty whole, towards the stedfastness whereof, the cooperation of his own *relative station therein,*—is ADMINISTERING! That mighty whole being upheld through *minuteness of precision* in all its component parts,—and that *precision,* being regulated by a Wisdom, as infinite in expansion, as infinitesimal in distinctness of detail.

In support of the foregoing hypothesis, the authoress has been obliged to devote many pages to observations upon *co-operative agencies among the integral portions of the universe.* This she has aimed at accomplishing, in the plainest manner:—

that is, in terms level to unscientific apprehensions like her own: and although the present inquiry was undertaken in relation to an important geological phenomenon,—and not in theological discussion,—yet she flatters herself the reader may find PROOFS quite as conclusive of beneficent design *and provisional care in Deity*, among celestial operations herein enumerated, as among the earthly instances of them, furnished by Paley's excellent treatise.

In refutation of this alleged impracticability from their remoteness of deducing instances of provisional care towards the heavenly bodies that are equal in minuteness of design to the one brought forward by this distinguished divine in the protection afforded a wasp by a sheath for its sting, the authoress begs to direct attention to the minuteness of care for Saturn, which governs the periodic difference between the revolutions of his two rings for the augmentation of magnetic diversities throughout that remote planet:—(as exemplified in the 10th chapter of this treatise):—and when the magnitude of Saturn is contrasted with the size of a wasp, she ventures to affirm, that the very nearly infinitesimal difference in the above *annular ratios*,—accomplishing as that difference does, the above important accumulation with a continuity, which no other mechanical process could have effected;—that this very nearly *infinitesimal rationic difference*, exhibits a *provisional care towards Saturn,*—equalling,—if not surpassing in MINUTENESS OF DESIGN,—the protection afforded the *insect,* by a *case* for the preservation of *its weapon of defence.*

CHAPTER I.

THE HARMONIOUS SYMMETRY OF THE PRESENT ORGANIC SCALE.—FORMER SCALES DIFFERING FROM IT IN COMPARATIVE MAGNITUDES, BUT EACH POSSESSING ITS RELATIVE SYMMETRY.—IMMUTABLE UNITY OF DESIGN IN THE GOVERNING LAWS OF THE UNIVERSE.—UNIVERSALITY OF ELEMENTARY INTERCHANGES.—THE EARTH'S POLAR REVOLUTIONS.—THEIR IMPORTANCE.

WHEN we contemplate the scale of organic symmetry pervading all surrounding objects, with the mutual dependencies, and indispensable actions and re-actions among their several functions,—no single class being fashioned for its own exclusive benefit, but *all* for one co-operative and beneficent agency,—we find ourselves encompassed by a system, whose *seeming immutability* contrasts strikingly with the changes in constant operation both within ourselves, and all connected with us. And hence, although every individual experiences manifold organic fluctuations, yet the general face of nature wears the same aspect towards *Man as a race*, throughout thousands of ages.

On the other hand numerous disjointed submersions, and other geological convulsions among strata immediately beneath the Earth's surface, together with fossil organizations widely differing from, and in many instances, at variance with the habits and nature of Man's actual race, prove, that important vicissitudes have agitated our planet at divers periods,—although from slow development in planetary operations, the *progression* of such organic changes, lies beyond the knowledge of man's present race.

The following remarks are intended to show, that the above *organic fluctuations,* and fossil phenomena, although appearing possibly at first, casual incongruities, manifest the *stedfastness* wherewith the laws of the Almighty Director of all things uphold "this universal frame" HIS CREATION—in fulness of vitality,—*not* by disjointed miracles, or reparations,—but, through *one continuous series of alternate elementary impetuses.* Alternations,—which govern the interchanges of elementary properties among all portions of the universe by agency of ELECTIVE POLARITY, upon the grand and fundamental principle of all nature's operations;—namely, ROTATORY OSCILLATION. In other words, that universal reproductiveness is maintained, through alternations of maximum and minimum activity, in the elementary interchanges carried on throughout all integral portions of the universe: such alternations, by the periodic mitigations in elementary impetuses thus everywhere *successively obtained,* crowning creation with one ceaseless circulation of invigoration and reproductiveness; as further on explained.

As we proceed, we shall find the above elementary interchanges carried on, with, *generally*,—nearly imperceptible progression; but deriving occasional invigoration from *periodic convulsions*, which agitate each integral portion in its turn, and are incidental to their co-operative relationship: and which periodic convulsions, by exciting and expanding the elementary properties inherent in each integral portion, widely augment their general transfusion.

Hence, *the boundless circulation of reproductiveness* as maintained throughout space, on the fundamental principle of all nature's operations,—"UNIVERSALITY OF REPRODUCTIVENESS, THROUGH UNIVERSALITY OF ELEMENTARY INTERCHANGES,"—with a singleness, and comprehensiveness of DESIGN, commensurate with the majesty of one eternal—sole creative Spirit, immutable in purpose, and omnipotent in execution.

Accordingly, in taking the organization of that fractional modicum of creation,—the Earth's planet—into consideration, if we compare the fluctuations, through which, both fossil remains and submerged strata, *demonstrate that organization to have passed*,—if we compare those fluctuations with the laws of the above immutable principle—viz. alternation of elementary impetuses in maintenance of universal reproductiveness,—we shall find, in these fossil and organic discoveries, *distinct* Records of renovatory epochs throughout this planet, of data beyond human calculation, and of results far too stupendous to have originated from *internal* propellance. It is therefore evident even to our limited faculties, that planetary vitality, is maintained by *two distinct resuscitatory* mediums.—The first, comprising the nearly imperceptible elementary interchanges among all integral portions of the universe, in constant actual operation throughout the planet;—the second comprehending those concussive, or *developatory transfusions,* whose *intensity is proved,* by the wrecks of former organic scales, and modes of existences.

The first renovatory mode, the experience of man's race testifies to be benignly continuous. And a little attention to relative reactions among nature's works, will show the second, or that of concussive transfusion, to be both PERIODIC and NEEDFUL, in the grand scheme of "universal reproductiveness through universality of elementary interchanges."—But being of more determinate character than the first mode, its *actuating mediums* are necessarily of more determinate natures. These must therefore be sought among *external impetuses,*—*periodic* in recurrence, and efficient in power, for such agencies. A combination satisfactorily found in a highly important part of the

Earth's external machinery;—namely, in the conjoint *Revolutions of the Earth's poles* around their respective polar ellipses:—each of which is compassed,—every 25,868 years and a fraction; and by whose interminable series, the climates of this planet are acknowledged to be regulated throughout cycles upon cycles, both past and to come.

It is the object of these pages to direct attention to these *polar revolutions*, as the operative mediums likewise of its *organic* fluctuations; and the further we proceed, the greater we shall find the importance of their agency, upon the Earth's planet.

True it is, the *agency* of polar revolutions has excited small popular interest in latter ages. From the abstruseness of technical phraseology, neither the immensity nor continuity of these mighty revolutions, have been apprehended by the unscientific; —while the all-pervading *activity* of their action,—as developed by Elective Polarity,—so intimately intertwines itself within every organic body, as to appear an inherent *property* in their several natures, and *not* an externally derived operative.—Its very intensity, conceals its universality. Since without Elective Polarity, no two particles could coalesce;—and were its agency withdrawn, the universe would decompose.

But if we attend to the geometrical precision with which *sites* for national edifices were selected, in reference to the recurrence of *astronomical epochs,* throughout eras, the gigantic dimensions of whose *architecture* far exceed the compass of man's actual strength—such as the greater pyramid,—the temple of Serapis, &c. &c.,—we shall discern the importance attached to *polar revolutions*, by those magnificent generations.

It is the object of these inquiries, to *recall popular attention* to the action of these, the Earth's polar revolutions, in determining the *organic scales*, of this planet, as well as its climates.

For this purpose a cursory survey of the co-operative laws of the universe, and of the general mechanism of our planet, will be necessary.

CHAPTER II.

NO INSULATED BODIES IN NATURE.—ALL NATURE'S RENOVATIONS CO-OPERATIVE AND GROUNDED ON ROTATORY OSCILLATION.—THE LAWS OF ROTATORY OSCILLATION CLASSED WITHIN TWO DIVISIONS.—DIVISION THE FIRST, ELECTIVE POLARITY.—ITS ALL-PERVADING INFLUENCE.—HETEROGENEOUSNESS OF PRIMITIVE ATOMS.

In accordance with the unity of design everywhere manifesting itself, we find all the operations of nature to be governed *by one fundamental principle*, for *one determinate* purpose. This *fundamental principle* comprehends the ROTATORY OSCILLATION *inherent in the motions, and operations, of all organic bodies*:—and this *determinate purpose*, comprises the *development* of *universal reproductiveness*, through *universal diffusion* of *elementary properties*. The accomplishment of this purpose, in reference to our own planet the Earth, consists, in the transfusion of the greatest possible variety of those elementary interchanges, throughout its organization.

For clearer apprehension of the functions of elementary interchanges, we must impress upon our minds, that there is *no insulated body in nature*.

No single—(that is no independent)—body, of whatever magnitude, could maintain either any given action, or mode of existence. Insulation would induce inertion,—inertion torpidity,—and torpidity would sink into corruption. An *insulated body must shortly, decompose*;—elementary interchanges, being essential to every mode of organic vitality.

For conservation of that vitality, each organic body, of whatsoever scale, must form an *integral portion of a community of bodies.* Each component portion of such community possessing a general affinity—but not identity of nature—with one another;—and all being governed by the same physical laws; that the elementary interchanges, necessary to their common vitality, may be uninterruptedly carried on. The functions of a similar community, are beautifully typified in the system of our solar planets, by the interchanges of THEIR elementary properties:—as further on explained.

The action of polar revolutions upon this planet, being founded,—like all other agencies of nature,—on the laws of rotatory oscillation, develop THE GRAND RENOVATING PRINCIPLE that governs those laws: and which, established by creative prescience for the conservation of its works in fulness of vitality, regulates all the operations of nature. This principle comprehends, PERIODIC ALTERNATIONS IN THE MAXIMUM AND MINIMUM IMPETUSES OF ALL ORGANIC NATURES, IN FURTHERANCE OF UNIVERSAL RENO-

VATION;—such periodic alternations, invigorating, by seasons of comparative repose, or inaction, (as further on developed)—the *elementary interchanges*, upon the *continuity* of which, the vitality of the universe depends. A principle we shall find beautifully exemplified in the action upon the Earth's planet of its polar revolutions. And hence the importance to our inquiry, of the organic fluctuations, and fossil remains, discoverable upon the Earth, as *practical demonstrations* of the existence of *periodic alternations* in *polar impetuses* upon this planet, throughout remotest eras. We now proceed to examine the laws of Rotatory Oscillation

The Laws of Rotatory Oscillation may be divided into two heads:—viz. the propelling agency of *elective polarity*,—and the controlling agency of *spiral courses*. The propelling agency of *elective polarity*, unfolding the properties inherent in each organic body, together with their consequent classifications;—and the controlling agency of spiral *courses*, marshalling those properties into one determinate ORDER of COURSES, whatsoever may be their individual magnitudes. This uniformity of courses will be manifest when treating, in its place, of that second division of the laws of rotatory oscillation, *spiral course agency;* when the perfection of that agency will open to our view, together with the all-comprehensive wisdom of its Almighty FRAMER:—since, without uniformity of courses among integral portions, *where* would be the co-operative harmony of nature?—and we shall find, that there is no UNIVERSAL UNIFORMITY of courses, except *that of* SPIRAL COURSE PROGRESSION, whence could be obtained, either, an equal diversity of elementary properties, or the above *renovating alternations*, among those properties.

Hence the paramount importance, we must repeat it, of rotatory oscillation, in the economy of nature:—since without the continuity, as well as universality, both as to time and space, of elementary *interchanges*, WHERE would be the MAGNIFICENCE,—nay WHERE, the very *vitality* of surrounding systems, a few thousand years hence? and wherein would consist the omnipotence of their Sustainer? Whereas the renovating laws of rotatory oscillation, *interminably* uphold the glories of infinitude!

For clearer comprehension of this actuating agency, the infinite *diversity* in the organic natures to be thus acted upon, should here be dwelt on: but in what follows, we must not be understood as wildly seeking to penetrate the sacred mysteries of Causation, or of primordial impetuses, &c. Subjects of unfathomable,—unapproachable intricacy, as relates to creative power, or originative essence; and as such, being shrouded from human faculties;—but in as far as relates to what may be termed the *mechanical diffusion* throughout space, of elementary effluxes, offering subjects level to ordinary capacities, from the sublime simplicity of operative mediums. An explanation shall therefore be here attempted of the above elementary diffusions:

All bodies or particles throughout nature, are in activity;—that is, exhibit *specific actions* and *reactions among themselves*.—All bodies, therefore, possess *definite properties*, prone to such activity, the definite modes whereof, marking the various natures of bodies.

All bodies therefore are divided into classes, more or less operative upon one another; each class differing more or less from all others, and in many instances, differing very discordantly. Each class exhibiting the properties peculiar to its class, and being thereby fitted for its functions,—and for no others.

From this minute, but determinate diversity, each class forms a link in the universal chain of nature's operations. For there is neither chasm nor inertion in them; every class contributing by its *express agency*, towards the general economy;—so, that were the functions of any single class suspended, the operations consequent on its agency, would remain unperformed, and more or less disorganization would ensue, in proportion to the importance of the class suspended.

It is therefore apparent, that the harmoniousness of nature's works, originates in the *heterogeneousness* of *properties* in *their operative elements*,—SYSTEMA-

TICALLY CONTROLLED: because, were all bodies or particles, of similar *nature*, (that is, *organization*) "this goodly frame" would sink into homogeneous inertion:—vitality being inseparable from motion;—and the laws of motion, *resting* on *diversity* of *operating mediums*. Inertion, therefore, is abhorrent to nature;—and no organizations, of whatsoever magnitude, are at rest. *Motion*,—being both the principle, and the test of vitality.

But from activity thus intense,—among natures widely dissimilar,—chaotic dissonance must ensue, and the universe become unhinged,—nay, could never have existed,—but for some all-pervading principle, —SOME GOLDEN THREAD OF ORDER,—everywhere interlacing it;—and it is the object of these pages to place that golden thread, before *popular* investigation, by directing attention to the fundamental principle of nature's laws—*rotatory oscillation*—as comprehended in the conjoined agencies of elective polarity and spiral courses,—and as exhibited in the alternations of the Earth's organic scales, by the action of polar revolutions. It will thence be found, that *Motion* is a practical demonstration of elective polarity.—In other words, that Motion is the manifestation of polaric activity, throughout all possible organic modifications.

To render this apparent, we must bear in mind, first, that all bodies are *organic*, there being none, however minute, that may not be decomposed;—

and secondly, that one common medium of elementary interchanges, for their common renovation, pervades all bodies of every magnitude. This actuating medium is called Elective Polarity;—and what is understood by the "*diversity of natures*" which mark the different classes into which all bodies are divided, comprehends the greater or lesser degree of susceptibility towards this actuating medium within each particular class.—This proportional susceptibility is regulated by the degree of *angular acuteness in the inequalities of their superficies*, and *of obliquity in the inclination of their poles*, incidental to all bodies, of each distinct class. It being the combination of certain degrees of angular acuteness with certain degrees of polar obliquity, which determines the proportional proneness towards the action of elective polarity, and consequently the nature, of each class.—Hence the "*natures* of *all bodies*" are said to be determined, by their specific organization.

And since every class possesses its express combination of angular and polar diversities, whereby its relationships towards all other organic classes is determined, it follows, that the combinations of such organic diversities, must be as multiple as minute. Because, as each modification of properties possesses its own distinct combined diversities, it can only coalesce with modifications, possessing diversities more or less in affinity with *these*: and hence the infinity, as well as minuteness in variety, of organic combinations.

Herein we discern the principle governing the two important divisions of polaric agency—Attraction—and Repulsion,—with their concomitant functions:—the combined organic diversities of one class of properties coalescing with those of corresponding angular and polar combinations, and more or less mutual attraction taking place between them;—while, on the other hand, all action with properties possessing angles and obliquities incongruous with its own, is obnoxious to each class of combined diversities,—and thence is rejected by it, in proportion to the degree of that incongruity:—inducing thereby, the action of *repulsion* between those bodies.

Each distinct combination of the above diversities constitutes therefore, what is understood by "*the polarity*" of a class—that is, determines the proportion of attractive or of repulsive impetuses, actuating every organic class, either towards or from, any other organizations on coming within polaric action; the corresponding degree of force in such impetuses, being determined by the proportional angular acutenesses and polaric obliquities, inherent in the operative bodies, and the more determinate these are, in any two bodies, the more active their impetuses, whether of attraction or repulsion.

Having thus exemplified the polaric relationships between an organic body or particle, with those of all other bodies or particles, whatsoever may be either their properties or functions, we proceed to observe that it is the circulation of those relationships throughout all the organic bodies comprising the universe, which constitutes the agency of Elective Polarity—that is the agency of one universal medium of elementary interchanges, throughout every possible organic modification. This is self-evident; because, from the diversified properties inherent in bodies of every denomination, the above relationships are in CONTINUAL EXPANSION,—each of the polaric diversities comprised within any one elementary property, forming, on development, the CENTRE of still further elemental polarities;—until those divergencies, from their infinity, comprehend the entire agency of Elective Polarity.

By Elective Polarity is therefore understood effluvial impetuses of ineffable activity, which circulate throughout all organizations; each emanation whereof, comprising certain elementary or magnetic properties, in accordance with the angular and polaric diversities inherent in its classification, and its activity being determined, as before stated, by the proportional polaric obliquity and angular acuteness, of its circulating qualities. Because from the infinite variety in the elements which excite polaric effluviums, the ACTIVITY of elective polarity must be correspondingly *diversified*:—and countless must be the circulating impetuses, everywhere propelling polarities within, and around one another, throughout the universal confluence. Impetuses,—multiform in activity;—which extract—modify—interchange—propel—and transfuse, countless renovatory effluxes — essences —elixirs, &c. &c., around the mighty Laboratory of Space:—and these, again and again, remodifying themselves, into fresh and fresh diversities of polaric impetuses;—consequently, into fresh and fresh remodifications of renovatory properties.

Here we must remark, that the *action and reaction of bodies*, must not be regarded as inconsequential in nature's economy, because *minuteness* in their *organizations*, conceals such operations from human sight. On the contrary, the journey of an infinitesimal in space, will be found as determinate in direction, as that of a man from Liverpool to London. True, there are neither turnpike nor railroads for its accommodation,—but the infinitesimal possesses what are *ten times more* determinate. It possesses its *own polarities*;—polarities exclusively belonging to its *class of bodies*, and acting throughout that entire class similarly, and exclusively, both upon the attractive and repellant polarities of other classifications; and *that*, whether the polarities meet as separate atoms, or in aggregate action.

The agency of infinitesimals in elective polarity, constitutes therefore, a primary object in physiological inquiries. But the terms "organization and angles," perhaps may be objected to, when applied to infinitesimals. It may be observed, in reply, that nature's laws are universal,—and however impalpable to *our senses*, if a body EXISTS, it must *have a form;*—and unless that form be *globular*, its superficies must exhibit INEQUALITIES. Now there is *physical certainty*, that infinitesimals are *not globules*:—inasmuch as an infinity of globules, could not be marshalled into intersectional coalescence,—as is the case with infinitesimals. Were infinitesimals globules,—an attempt by nature *even at a zephyr*, would involve a whole region in quicksand.

We may therefore assume the *inequality of infinitesimal superficies;*—those inequalities being of angular order; and from the analogy pervading nature's works, we may further assume, that the classification of infinitesimals, like that of tangible bodies (for example the family of salts) is determined by such definite combinations of polaric obliquity with angular acuteness, as distinguish the various classes of polaric scales. This fact is corroborated by scientific researches within gaseous regions, the more the *relative degrees in subtility* subsisting among their elementary affluxes, become ascertained: relative degrees of *gaseous subtility* being analogous to greater or less acuteness of *angular inequalities* in infinitesimals, according to the laws of elective polarity.

Elective polarity thus constituting the momentum of universal activity, that is, being the primary, or propelling division of rotatory oscillation, we proceed to the second division; viz. to the controlling agency of spiral courses.

CHAPTER III.

THE LAWS OF ROTATORY OSCILLATION CONTINUED: DIVISION THE SECOND, SPIRAL COURSE ACTION.—THE NATURE OF THAT ACTION—ITS CELERITY—ITS UNIVERSALITY.—SIR ISAAC NEWTON'S UNIVERSE OF VACUUMS.—THE ACTUAL UNIVERSE OF INTERSECTIONAL VITALITY.—PLANETARY VITALITY UPHELD BY TWO DISTINCT RENOVATORY IMPETUSES: THE ONE GRADUAL AND CONTINUOUS, THE OTHER CONCUSSIVE AND PERIODIC.—THE NATURE OF GRADUAL PLANETARY RENOVATION.

In accordance with immutable unity in creative design, spiral course agency manifests itself in the *uniformity of courses* maintained by ALL ORGANIZED BODIES:—an uniformity forming, as we have seen, the second division in the laws of that fundamental principle of all nature's operations, *rotatory oscillation*, and all classes of organizations, becoming thereby, intertwined within one common dependence of mutual interchanges, for mutual renovation.

We shall therefore inquire *wherein* consists the superiority of *spiral courses for renovatory* agency, by examining,—1st, into the general nature,—2dly, into the celerity,—3dly, into the universality, of spiral course operations;—and finally, whence originates the nearly imperceptible minuteness, wherewith spiral course agency *actuates the general renovation of planets?* It will thence be found, that the action of spiral courses, accomplishes a wider and more diversified accumulation, and a more determinate diffusion, of elementary interchanges, and *that*, under more modified regulations, than *any other universal form of motion*, could produce. And were not *uniformity of courses universal*, WHERE would be harmony among celestial movements?

1st. *The general nature of spiral courses.* Spiral course agency acts equally in courses of every magnitude; comprehending alike, circuits too minute for unassisted vision, and revolutions beyond human calculation: each course thereof, maintaining an ellipsical form, but of elongation proportioned to the magnitude of its circuit. It is this ellipsical form, that constitutes the distinction between spiral, and circular courses; together with the superlative efficiency of spiral course action, in elementary diffusion.

A circle preserves the same dimensions throughout its figure; and, with proportional reference to its *centre*, a circular course may terminate at any point of its circumference. A body moving round a circle, always preserves the same track, and may accomplish *a definite course*, either by persevering in a given number of circuits, or by confining itself to a single one.

Not so in relation to spiral courses.—*No two* *successive* spiral courses, have identical orbits, each succeeding one, retrograding *somewhat,*— though very minutely,—from the preceding one,—in like manner, as *that* preceding course, somewhat retrograded, from *its* preceding spiral course. Each actual circuit concluding, by commencing a *fresh* spiral circuit of like minutely retrograding nature; and so on *ad infinitum.* An organic body therefore, once in spiral circuit, must continue therein throughout its existence; *intersectional continuity* forming the groundwork of spiral agency,—and rendering a series of spiral courses, interminable in their nature. Hence the *ellipsical form,* with its proportionate ellipsical elongation, which is inherent in the motion of all bodies.

Invariable uniformity of action, therefore, characterises circular,—and endless diversity, spiral course action;—and hence the superiority of the latter, for elementary renovation. Because, as all bodies in circular courses, must maintain their respective orbits, circular courses could merely derive repetitions of the same mutual elementary exchanges among one another, until in time, exhaustion would be superinduced. On the other hand, as no two successive spiral courses exhibit the same precise orbits, so, no single body of whatsoever magnitude, can present the same superficies *twice in succession,* towards any other body.

Thus each express body, or particle, while maintaining its individual course, is imparting *fresh proportional quantities* of its own properties, towards various other bodies or particles, (which are equally pursuing *their* respective spiral course functions,)—and is receiving from them, in exchange, fresh proportional quantities of *their* inherent properties, in accordance with the affinities of their respective polarities. And the greater the number of bodies, or particles, and the more diversified the relative positions of their superficies, the greater will be the quantity, and the more definitely comprehensive the qualities, of the elementary properties thus interchanged.

We proceed secondly, to the CELERITY *of spiral course action ; as evidenced by the fluctuations perceptible in ourselves, as individuals*, and in all connected with us, before adverted to in page 7. Such is the celerity of elementary interchanges throughout all organizations, that notwithstanding the preservation of individual identity, yet no single body, of whatsoever species or magnitude, maintains the same *express properties* any two successive seconds; every organic body transmitting from itself, certain portions of elementary properties towards surrounding bodies, and imbibing from them, in exchange, corresponding quantities, but of different qualities, in accordance with the polaric attractions, and repulsions towards itself, of the surrounding bodies.

It is by the celerity of what may be termed "*the action of decomposition,*" therefore, that each organic body maintains those interchanges with other bodies, upon which depend both individual and universal vitality. Because it is by the *celerity* wherewith elementary interchanges are accomplished, that the relative *equipoise* of any *one particle towards all other particles,* can be preserved. And it is by the maintenance of *equipoise* in each particle, *among all other particles* whereby *celerity,* in any single particle, or in any aggregation of particles, can cooperate towards the primary object of all nature's operations, universality of reproductiveness through universality of elementary interchanges. A cooperation which the briefest interval in that celerity, would undermine, by engendering a preponderance in *some* particles over *other* particles, or in some aggregation of them over other aggregations of particles, subversive of polaric activity, and ultimately producing inertion.

Thirdly.—We come to the *universality of spiral course interchanges.*

As all bodies of whatsoever magnitude move in spiral courses, and as no two successive spiral courses preserve the same orbit, it follows, that no two bodies present *the same superficies* towards each other, *twice successively.* Each fresh spiral course therefore,—both from organic dissimilarity, and ellipsical spirality,—presents some diversity, however minute, in the direction of its *superficies*, towards those of all other bodies.

Hence the variety of elementary interchanges obtained *even by a single atom*, through spiral course action.

But when in addition, we take into account, the infinity of worlds within worlds, everywhere surrounding us,—each component particle whereof, constituting in *itself*,—*a miniature world* of spiral course agency,—most of these miniature worlds, having their specific inhabitants, and *all*, possessing their relative polarities of attraction and repulsion, whereby the definite operations of decomposition —recomposition—interchanges, &c. &c. are effected throughout every integral portion *of those miniature worlds*,—when we take into account *this intensity of activity*,—wrought harmoniously into *one superlative unity*, for the maintenance throughout infinitude, of the elementary interchanges whereon depend the vitality of the universe,—when we take all these considerations into account, we dare affirm that the agency of spiral courses, *as the appointed, all-pervading medium of renovatory interchanges*, affords manifestation of an all-superintending Spirit, —an ORIGINATIVE DESIGNER—from the contemplation of *which*,—no man can arise an Atheist.

Hence,—the surpassing perfection of spiral course agency, for accumulation, and diffusion, of elementary properties throughout infinitude, *opens* *to our view.* Therein we discern the golden thread of Order, so rudely snapped asunder by Sir Isaac Newton's SYSTEM (!!!) of a universe FILLED with *voids* (as he *chose* to *call*, what, in fact constituted the dismemberment of *all systems* whatsoever)—therein lies the golden thread, so justly prized by the ancients,—so splendidly illustrated in the sacred harmonies of Pythagoras,—so beautifully typified by the *clue of thread* consigned by Ariadne * to Theseus, when he explored the SACRED MYSTERIES OF NATURE, (allegorically designated, the Cretan Labyrinth.)—" A clue,"—which, as long as he retained it, rendered Theseus, Master in every discovery,—Paramount in every enterprise,—the triumphant Dismemberer of Error † in its foulest deformity; and the Regenerator of Philosophy's ‡ purest lights:—but the abandonment of which clue, together with Ariadne, in the island of Naxos, involved Theseus in mental obscuration, and finally in destruction.

Let the grandeur of *creative singleness of Design*, BECOME THE CLUE of Astronomical Research,—and,—like Theseus *we* shall penetrate within Nature's Labyrinth,—annihilate that Minotaur of Science, pedantic phraseology,—and unfold the flood-gates of celestial magnificence.

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* The allegorical principle of Truth.

† As typified by the monster Minotaur.

‡ As typified by the rescue of stainless youths and virgins.

So much for the general character of spiral course agency.

Regret must here be expressed, at the erroneous lustre shed by national pride, over *some* of Sir Isaac Newton's *astronomical theories.* Undiscriminating enthusiasm, is apt to invest all the hypotheses of eminent professors, with infallibility, without attending to the line of mental demarcation, that circumscribes all mundane excellence.

As a mathematician—an algebraist, Sir Isaac Newton was a shining light; and probably was entitled to unlimited confidence:—but his views were too contracted for astronomy.—He could not enter into the majesty of the celestial movements. That is, of movements ordained for the continuity of *one august self-developing Design.*—A Design,—self-developatory, through its cooperative reactions: —infinite in its individualities,—its diversities,—its interchanges,—but *invariable* in its *complexities*, for *singleness of purpose.*

Into sublimities like these,—which render astronomy the sublimest of studies, and the most redolent of devotion,—Sir Isaac Newton could not enter. The utmost grandeur with which he could invest the Universe, was *that* of a splendid toyshop.—Large in dimensions, but homogeneous in materials,—and containing none other than specimens of ingenious, but *disjointed mechanisms;* short-lived in construction, and in constant need of reparation. The avidity with which bewildered amazement grasped his "SYSTEM" (as it is *called*) of space FILLED with VOIDS (!!!) paralyzed the astronomical impetus just given by Copernicus' revival of the Pythagorean system; and unhappily has retarded the development of astronomy, as a practical science, during the last 200 years:—but common sense at length revolts at Sir Isaac Newton's *void* system of miraculously propelled worlds, each of them necessarily fading and drooping in *insular desolation,* amidst surrounding vacuities and nonentities. One might as well look at Jupiter through a microscope, as study astronomy under Sir Isaac Newton's auspices.—The universal Creator framed Sir Isaac to analyze aliquant quantities, not to designate immensity. In his intended sphere, he is, like all created instruments, admirable in excellence;—when he aims beyond that sphere, he becomes puerile, and fantastical; while the splendour justly surrounding his labours on other subjects, renders some of his astronomical theories little better than an *ignis fatuus* of perplexing bewilderment.

We now enter a more complicated portion of spiral course agency:—namely, the *nearly imperceptible progression* wherewith the *general renovation* of planetary bodies is maintained (see page 8). And as all planetary renovation depends on ceaseless diversity in actuating elements, the following remarks may be necessary.

We have found further back, that mutual reaction is necessary to vitality in all organic bodies : —by which is understood *adequate elementary interchanges among all bodies.* Here we must remark, that each elementary efflux thus exchanged, flows from—in fact—*a partial decomposition* in the originative body;—in other words, from over exuberance within that body, of some among the properties of its particular class.—From such over exuberance, morbidity would ensue on long retention; and hence the necessity of partial expulsion. On the other hand, the principle of attraction towards this particular afflux in another body, is caused by undue *paucity* of those particular properties within that other, or attractive body,—and it is from the polaric actions of repulsion and attraction between the two bodies, that the requisite affluxial equilibrium is obtained for them both. Thus for the harmonious equipoise of nature's works, every elementary property within every organic body, has its *antagonist,* or counterbalancing *property,* within some other body : and since these antagonist properties are actuated by their corresponding plus and minus activities, it follows, that they become simultaneously interchanged between corresponding organizations, through the agency of elective polarity; the cooperative bodies thereby mutually invigorating each other. No organic body whatsoever could therefore *exist,* unless the action of partial decomposition,—or of *over exuberance,*—was in efficient force in *surrounding bodies,* for the transfusion of adequate portions of *their respective affluxial,* or elementary properties, within the organization of that specific body. But it likewise follows, that continuity of organic vitality rests, not merely on *universality of decomposition,* but also on corresponding portions of those *transfusions* being adequately *received* within other bodies.

The action of decomposition being essential to vitality, its development constituting, in fact, nature's storehouse of reproductiveness, we find decomposition supereminently operative. The decomposition of integuments, forms indeed the only action *exclusively inherent in all bodies*:—that is, the first, and the last, of which every organized body is capable. When this action has ceased, the body has become extinct,—it has exhaled;—it has passed away,—subdivided into an infinity of affluxial torrents, or primary diffusions.

In this portion of nature's economy, two striking distinctions offer themselves for observation.

First, that organic vitality in a body, does not consist in the diffusion, *by that body,* of its own *properties,*—such diffusion being concomitant with decomposition, and unrestrained decomposition terminating in organic dissolution;—but, that *organic vitality* comprehends likewise, capacity for the *reception*, by that body, of the inherent properties of certain *other bodies.* The state of organized bodies therefore, called death, comprehends, —as far as relates to *physical operation,*—sudden *incapacity* for the *reception*, by bodies, of extraneous properties from surrounding ones.* The counterbalancing compression of such extraneous transfusions, being removed from the superficies of a body, on cessation of its attractive or recipient faculties, the inherent properties of that body, acquire an *internal impetus*, beyond the average of its vitalic diffusion;—and hence each inherent property, struggling for emancipation, rushes into affluxial streams of decomposition. The more healthful the previous state of the body, and the more sudden the cessation of its attractive, or recipient faculties, the more impetuous will be these affluxial torrents; —that is, the more immediate the corruption,—because the more *vigorously active*, will be the *uncompressed properties*, in escaping. The state of corruption into which a body is thrown by the above unrestrained action of decomposition, is therefore not a state of morbidity,—but of OVER-

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* Hence the revulsion caused on suddenly encountering a corpse.—The effluxial streams of decomposition rushing from the corpse upon the living body, with this accelerated force;—while from want of recipient power in the corpse, the properties naturally propelled by the living body in exchange towards the corpse, being repelled back again upon the living body, with accumulated impetuosity.

EXUBERANT VITALITY, eager to burst disorganized bonds.

Secondly.—The conservatory functions of an organized body having ceased, its mass might be deemed a wreck.—But nature admits of no wreck within *her* precincts. Every thing with her, is onwardly progressive, *in fulness of reproductiveness.* Hence the *organic identity* of the above body has *ceased,* only to develop the polaric individualities of its component particles, through spiral course action; for no *convulsion* suspends the operations of that universal agency.—(And does not sudden *organic destruction* even in a *fly,* constitute an integral convulsion within *nature's economies?*) —Everywhere spiral course agency is in activity,—guiding casual or minute decompositions, with the same distinctness that counterpoises prominent revolutions; and thence transforming the *apparent morbidities of corruption,* into emporiums of vitalities,—of new-born races;—which races flourish and decompose again and again, until fitted for exhalation:—that is, for yet higher sublimations; —and wherein the last particle of the original organization, and probably the densest of the whole, becomes finally lost to human perception, —*although not to its own native polarities.*—*These,* —still bear it onwardly in spiral successions of regenerated, and regenerating activities, in accordance with the elective affinities and repulsions, through which its *identity* has to pass, both in agencies towards other bodies, and throughout its own rarefactions.

Hence, throughout ceaseless elementary exchanges and decompositions,—the preservation to each atom, of its native *polarity!*—THAT STAMP OF CREATIVE DESIGN!

From the above remarks it will be evident, that the *general action* of *planetary renovation* is developed with nearly imperceptible progression. Because from the heterogeneousness of originative atoms, the formation of *effluviums* proportionate to planetary renovation, is tediously complex.—Multiple being the actions and re-actions among their polarities, for the liberation,—abstraction,—and subsequent decompositions, and recompositions, necessary to form aggregations sufficient for agency upon planets;—and such complicated processes, being essential both to develop their various natures,—and to determine their definite functions. This will be further apparent when treating of the subdivisions of elementary properties into the various effluviums in relationship with planetary renovation. How rapid soever, therefore, may be primary elementary abstractions, the general action of renovation upon planets, must be minutely progressive; the subsequent *concoctions* from properties thus heterogeneous, requiring periods of wide extent to bring all their affinities and repulsions into play—and infinite must be the series of decompositions, recompositions, interchanges, &c. among the higher or sublimated essences, while compassing effluviums necessary to the ordinary conservation in a planet of vitalic reproductiveness.

In such polaric complexities may be traced instances of provisional care:—because if less unimpeded, affluxial action might degenerate into frequent organic concussions, and the sacrifice of actual inhabitants might be continually requisite, for the maintenance of planetary vitality.—Whereas from the combined agencies of elective polarity and of spiral courses, the elementary effluviums necessary for planetary renovation, become dilated by counterbalancing actions;—and induce a series of renovatory phenomena so progressively *dove-tailed* (as it were) within one another throughout all their ramifications,—as to exhibit to contemporaneous races, *one magnificent unity of scale.* Throughout all known history, an imperceptibly minute progression in every order of planetary renovation has thence been carried on: and thus to the present race of this planet's inhabitants,—as they pass nearly unconsciously to themselves, from, and towards, the most opposite extremes,—that is, from intensity of heat, to intensity of cold,—from day to night—childhood to age, &c. &c., the surrounding organic symmetry appears demonstrative alike of its own immutability, and of its exclusive reference to MAN'S ACTUAL STATE: the organization of every object man beholds, being graduated in subserviency to the wants and habits of his present standard;—so that the smallest deviation therefrom, in any existing mode or membrane, either in dimensions or construction, would subtract that *relative genus* from the general subserviency.

But amidst this universal symmetry—this apparent stability—phenomena present themselves, whereof *some* are incongruous with immutability of scale,—and others are indicative of planetary concussions; and hence it is manifest, that two distinct classes of impetuses are CO-OPERATIVE in upholding planetary renovation, throughout the mighty cycles of their existences. The one,—or that for *gradual renovatory* development, — being of the *continuous progression*, already dwelt on, and of the benign *minuteness* of which, the perceptions of our whole lives render us witnesses;—the other,—being of more stimulant activity—and renovating *over-wrought properties*, by the *periodic* organic concussions and submersions, the desolating operations of which are daily unfolded by scientific researches; while their renovatory results are exhibited, in the continuous vitality of our planet. Such concussive submersions, however contemporaneously awful, are therefore equally indicative of provisional care, developing as they do, fresh and fresh sources of planetary reproductiveness, and unquestionably forming parts of one grand and continuous design, whereby the vitality of every planet is maintained.

We therefore assume, that the above *concussive* submersions, are *periodically incidental* to the Earth's planet;—that they are demonstrative of the GRAND RENOVATORY principle, inherent in rotatory oscillation,—viz.—alternation of maximum and minimum impetuses,—in every organic modification whatsoever;—and lastly,—that these alternations are *systematically induced throughout this planet*, by the action of its polar revolutions.

We trust a general survey of the Earth's mechanism, may exemplify the above hypothesis: since it must be observed, that in the foregoing observations upon elementary renovation, we refer—*not* to the conservation of any particular mode of existence, or portion of time or of place,—but to the continuity of one *conservatory principle* throughout all PLANETARY ORGANIZATIONS. Neither in speaking of planetary concussions,—revolutions,—or progressive renovations, do we understand these actions, as confined exclusively to any particular orb, or period.—But we understand, thereby,—the actuating principle of *rotatory oscillation* displaying itself throughout this globe, and throughout all other Globes, both in minutely renovatory progression, and by *periodic organic concussions:* and thus, by producing invigorations *within each* *of them*, augmenting vitalic exuberance throughout them all.—It being the *immutability of the laws of planetary natures*, to which we are here attending.

When we find the laws of rotatory oscillation thus upholding *vitality* throughout all time and space, we conceive, that their *agency* may be termed with correctness, *one* and *continuous*—although propelling simultaneously, an infinity of integral operations:—because *one* undeviating design, grounded upon *one* immutable principle, actuates and modifies each distinct operation, for *one* determinate and immutable end.

CHAPTER IV.

THE DIVERS ORGANIC SCALES EXHIBITED THROUGHOUT THE EARTH'S PLANET AT DIFFERENT EPOCHS.—WHENCE THE PROBABLE ORIGIN OF THIS DIVERSITY?—CONNEXION BETWEEN THE SCIENCES OF ASTRONOMY AND GEOLOGY.—THE AGENCY OF POLAR STARS.—MYSTIFICATION OF TECHNICAL PHRASEOLOGY.—SIMPLICITY OF CELESTIAL MOTIONS.

THE first phenomenon that arrests attention, as derogatory to immutability in the present symmetrical scale, comprises relics of edifices, and of other masonry—dispersed over various portions of the Earth's surface, and beneath her higher strata,—of *magnitude surpassing* the powers of *man's actual race*. The very materials not being within compass of present human numbers or mechanism, to extract from adjacent quarries:—still less to transport from distant countries, or to elevate into structures, of which they exhibit the stupendous fragments, and in some instances, even the existing specimens.*

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* For instance, the Temple of Juggernaut in the East.—"It is impossible," says a recent traveller, "to give an idea of the imposing magnitude of this mass of building."

Here follow details of the distinct *blocks of granite*, employed in the erection of this wonderful Temple:—but their measurement appears so enormous to the authoress's *modern*

And yet the most dilapidated of these stupendous fragments *bear traces of design for architectural*

scale of apprehensions, that instead of stating them, this instance of architectural grandeur shall be followed by others taken from approved authors, who were themselves eye-witnesses of them.

Example 1.—Diodorus records six gigantic statues, elevated by Sesostris, each whereof consisted of one single stone: two of them, of 54 feet 8 inches and a fraction each in height, the statues of Sesostris and his wife:—the other four, each of 36 feet 3 inches and a fraction in height, being the statues of his four sons.

Example 2.—The city of Sais in the Delta, the ancient metropolis of Lower Egypt, possessed a stone 38 feet 3 inches and a fraction long, 25 feet 6 inches and a fraction broad, and 14 feet 7 inches and a fraction in depth,—and within which was hollowed out an apartment 32 feet 9 inches and a fraction long, 21 feet 10 inches and a fraction broad, and 9 feet 1 inch and a fraction high. This stone was brought from quarries as far remote as the islands near Elephantine, and was placed before the magnificent Temple of Minerva in Sais. Its transportation thither was by water, and occupied three years.—Herodotus, lib. ii. p. 155.

Example 3.—The head of the Sphinx, recorded by Pliny, was 102 feet in bulk, and rose 62 feet "above the belly;" the body was 143 feet long. It was presumed to be the sepulchre of King Amases.—Pliny's Nat. Hist. c. xii. p. 36.

Another of these Sphinxes, says M. Lucas, lies on its side near Lake Mahriga, with the head severed from the body.—See M. Lucas, pp. 312, 321.

Example 4.—The stones forming the steps of the largest pyramid. These stones proportionably diminished in dimensions, towards its summit, but the majority of them were 30 feet in length, and those towards the base of the pyramid were still larger.—Herodotus reports these stones as hewn in, *purposes*, analogous to the designs and purposes of the architectural works that have been projected,

and transported from the Arabian mountains.—Herodotus, lib. i. c. 9.

Example 5.—The ancient Egyptian Labyrinth, near Lake Mœris, and from whence, in long after ages, Dædalus is supposed to have taken the model of the Cretan Labyrinth. This grand allegorical structure comprehended, in fact, the Temple of the Sun, and is recorded by Pliny as built nearly 5,000 years before his time by Pelesuccus or Tithoes, "ONE OF THE DEMI-GODS"—(one of the terms whereby the earlier recorders of national facts, denominate the *antecedent gigantic races* of the Earth's planet, everywhere to be traced). This transcendent fabric had 12 doors;—6 whereof opened towards the south, and 6 towards the north—as in reference to the yearly months. It contained 12 distinct palaces, as they were called, doubtlessly emblematical of the 12 ecliptical constellations—and these palaces were subdivided into 3,000 different apartments—in affinity with the number of stars, visible to unassisted vision:—1,500 of these apartments constituting the upper,—and 1,500 the subterranean division of this Temple; in conformity with our division of the heavens, into two distinct hemispheres. The subterranean division was cautiously concealed by the priests; but Herodotus, who himself inspected the upper portion of this wonder, expressly declares that what he saw therein seemed TO SURPASS THE ART OF MAN. Each particular apartment within the structure communicated with every other throughout the whole—in noble illustration of the constant interchanges going on in nature's works,—and so many ways out of various passages, continues he, and such infinite returns back again amongst them, afforded a thousand occasions of wonder, as thus he passed from a spacious hall to a chamber,—from thence to a private cabinet,—from thence again into other passages; thence into the next chamber, and then into still more spacious apartments, halls, &c. &c. All and accomplished *by man, throughout the known history of his known race;* and which works, have

the roofs and walls being encrusted with marble, and adorned with figures and sculptures, and the halls being surrounded with finely polished pillars.—Herodotus, lib. xi. p. 148.

Strabo and Pliny, in corroboration of Herodotus' description, add, that this Edifice stood in the midst of an immense square surrounded by distant buildings, that the porch was of Parian marble, and all the pillars were of marble from Syene. That it contained Temples of their several Deities, with their galleries, and had an ascent of 90 steps, adorned with columns of Porphyry, images of their Gods, and statues of their Kings of a MONSTROUS SIZE. That the whole Edifice was of stone—the floors laid with vast tables of it, and the external roof "appearing a field of stone." That the passages met and crossed each other with so much intricacy, that it was impossible for a stranger to find his way either in or out without a guide, and that some of the apartments were so contrived, that "on opening the doors, there was within a terrible noise of thunder."—Strabo, lib. vii. p. 1165. Pliny, lib. v. c. 9.

The solidity of this building withstood for very many ages, not only the ravages of time, but of the inhabitants of Haracleopolis. This people worshipped the ichneumon, the mortal enemy of the crocodiles, and bore irreconcilable hatred *to the Labyrinth,* which served as a sepulchre to the *sacred crocodiles:* hence they strove by every means to demolish that Temple.

A striking instance of geometrical precision in architecture is still displayed in the remains of this Temple. Having passed the marble portico already named, you enter a grand hall, all of marble, which originally must have been nearly 50 feet in height, (compressed, as it is now, by rubbish and dust, it still comprises above 40 feet); the roof of this hall consists of 12 tables of marble, exquisitely joined, each 25 feet long, and 3 feet broad, which crossed the hall from one extremity to the other, the roof not being arched, but flat.

invariably been executed on scales PROPORTIONED TO THE STATURE and accommodation of man's

And the spectator is struck with admiration at the boldness of the architecture, it being, says an author, scarcely conceivable how a weight so prodigious as this roof could continue during so many ages, in a position thus unfavourable. But on the contrary, in the authoress's opinion, that stability resulted from the *talus principle* adhered to in Egyptian architecture.—M. Lucas, tom. xi. p. 10.

Example 6.—The formation of Lake Mœris. This lake was formed by King Mœsis as a grand counterbalancing reservoir against the irregularities of the Nile's inundations. Its present contracted scale veils its former glories;—but the ancients make its circumference to be not less than 450 miles, and its depth in many parts to be 50 fathoms. Land-locked towards the sea, a main canal of 300 feet broad, and 10 miles long, formed by King Mœsis, brought the superfluous waters of the Nile into this Lake, when that river rose inordinately high; thereby preventing unwholesome stagnation to the surrounding country, and supplying its lands with water, when the river failed; while two considerable springs of water within itself insured it against dryness. The above supply of water to the adjacent country in dry years was effected by narrow channels and ditches cut in various directions from the main channel. These channels still exist, and their number and structure are worthy admiration. In Herodotus' time, two pyramids stood in this Lake. Many architectural remains are still visible there.—Herodotus, lib. xi. p. 149. Diodorus, lib. i. p. 49.

Example 7.—A magnificent palace or temple near Syene, in Upper Egypt,—as large, travellers state, as a "whole city!" having four avenues of columns leading to as many distinct porticoes, and each of these columns comprising one single block, 73 feet in height. The number of these columns is nearly 6,000.—M. Lucas, tom. iii. p. 426.

actual race. Both the above architectural materials and scales, indicate therefore a period,—howsoever

Example 8.—Thebes, previous to its spoliation by Cambyses, is stated to have comprised 23 miles in length. It contained four remarkable temples; the circumference of one of them is stated by Diodorus to have been a mile and a half, and its height 78 feet 5 inches and a fraction, with walls 24 feet thick. There were no fewer than eight grand entrances into this Temple, to three of which were avenues of great extent with Sphinxes. Of these avenues, two were likewise adorned by 60 statues on each side. As Thebes may be regarded one of the most ancient cities, the memorials of whose original grandeur and proportions still remain somewhat within our observation, we must remark, that the vastness of that grandeur and the colossal size of its statues, corroborate the superior organic magnitude assumed to be prevalent previous to the remote epoch of that city's foundation. We wish therefore to direct attention not merely to the vastness of Thebes, but to the magnitude of some of the colossal fragments everywhere dispersed around it, and which are of such exquisite workmanship as testify the science of those times.—For instance, the first gateway to one of the above avenues is of red granite, highly polished, richly adorned with hieroglyphics, being 150 feet in length, and 35 feet in depth. The colossal images on each side within this gateway, are of women, and of exquisite workmanship; the exterior statues, leading from it on either side, are of men, which although sunk somewhat beneath the present surface of the ground, still stand 15 feet in height above it. Diodorus, lib. i. p. 43.

The hand of one of these statues, when measured by Pocock, proved 16 inches in breadth, and the head 5 feet 6 inches long. The trunk of another statue proved 7 feet and a half broad.—Pocock, p. 90, &c.

Example 9.—The statue of Memnon. This appears the most renowned statue in antiquity. Its preservation was efficient remote and unknown to history,—wherein an organic symmetry prevailed throughout our planet,

in the second century of our era to be vouched for by Pliny, Strabo, Pausanias, and Philostratus.—This statue was in fact an *oral sundial,*—speaking to the ear, as others do to the eye. Hence an instance of the depth of Egyptian science in the manifestations of a marble, whose peculiar porosity was acted upon by one particular solar ray inclination,—namely, by the *obtuse one of sunrise,* and which thence *compelled it to emit sound.* This sound they describe as like the breaking of a harp string when winding up. Philostratus says, " it was said to speak when the rays of the sun came to its mouth."—Philostratus, *ibid.*

Pausanias and Pliny testify this its daily power of sound. Strabo heard it when staying with Œlus Gallus, the first Roman governor of Egypt,—but suspected it, he says, to be a trick. And a gross imposition on human credulity it certainly was. The existence therefore of this statue of Memnon in a portion of ancient Thebes, on the west side of the Nile, called Memnomium (from the statue) is placed beyond dispute by these celebrated authors. When thrown down by orders of Cambyses, it fell on its face; a circumstance to be regretted. The proportions given of this statue are—from the bottom of the foot to the top of the knee 29 feet; from the bottom of the foot to the top of the ankle 2 feet 6 inches; to the top of the instep 4 feet; the foot is 5 feet broad, and the leg 4 feet deep. Denon testifies the shoulder breadth of this statue to be 25 feet, and calculates its height to have been 75 feet.—Pliny, lib. xxxvi. c. 9. Strabo, lib. vii. p. 561. Pausanias, lib. i. c. 42. Philostratus, lib. vi. c. 3. Denon, vol. i. p. 318.

Example 10.—This scanty list of everywhere innumerable wonders, shall conclude with the astonishing Grots of Osyut, of immeasurably greater antiquity than the former ones. These grots are said to be above a thousand in number, and *far surpassing the present* in magnitude;—yet like the present scale, evidently grounded on the habits and wants of the *paramount race of the epoch*:—a race, apparently impelled by the mental purposes, and effecting those mental purposes by a physical instrumentality, similar to those of man's actual race. Because, how much soever that *remote* para-

M. Lucas went within above 200 of them. Some of them are very large; one in particular, spacious enough to contain above 600 horse in battle array. It is cut out of the rock by *the chisel*, and is supported by vast square pillars of the same rock. In this grotto there are several small seats to rest upon, and from some traces left, the figures of several Deities were painted there, but now defaced. These grots are ranged in order, with doors answering one another, on which are several images of the ancient Gods of Egypt in basso-relievo, some having a staff in their hand as if to guard the entrance. These grots exhibit great diversity of apartments. In some, wells have been sunk; but the most wonderful of all, are the catacombs hollowed out of the rock at the furthest end of these grottoes, and the number of mummies therein contained, and of the tombs adorned with sculptures in basso-relievo, now much defaced. "There is scarce a monument in any other part of the world," says our author, "which carries such evidence of MIGHT IN THOSE WHO EXECUTED IT." As for the time when these grots were cut, and for what purpose, it is in vain to expect any light from history. The people of the country believe them to have been the WORK OF DEMONS, who hid immense treasures therein. Thus, whichever way we turn, we find traces of antecedent gigantic existences having peopled this planet—of wants and faculties similar to our own,—and the further we penetrate into bygone ages, the wider we find the SCALE of those traces to expand.—M. Lucas, tom. ii. p. 76, &c.

mount race might differ from man's present modification, in particulars efficient to form, to vulgar apprehension, a *gulph between their species*, yet a comparison between those *fragments and present edifices*, presents an affinity of design and execution, that stamps the races of their *respective fabricators*, with intellectual and physical identity. It proves, that *both* possessed in common, the power of apprehending a definite design by their mental faculties (however different the external *modifications enclosing those faculties*) and of compassing that design, by their *own physical instrumentality;* namely, by *that* of some member in *their* organization, answering to what man, in his present configuration, calls HAND;—THE HUMAN HAND!—that comprehensive instance of creative bounty; since with all his intellect, *what* would man BE *without his Hand?* A being gnawing the Earth for subsistence, and devoured by stronger creatures as their prey! Cuvier admirably says, that the discovery of "corresponding *teeth and toes, identify the species of any fossil animal.*" If the union of these subordinate members be thus conclusive,—of which there is no doubt,—shall not evidences of the united agencies of the two superlative gifts of the Creator,—namely, the intellect to conceive and the agency to execute *a design in singleness of purpose*, shall not existing monuments of this union demonstrate identical paramountship in races, howsoever remote the epochs of their existences, and dissimilar their organic scales?

It is rational therefore to presume, that the organic scales of those remote periods, were analogous in magnitude, to the gigantic bulk of their paramount Inhabitants. Accordingly, from this architectural survey, *one discrepancy,* at least, appears in the *immutability* of the present organic scale.

But in perforating the Earth's surface, another, and still wider, discrepancy, becomes evident. Man's present survey finds itself in a region as novel, as if admitted within another planet! Gigantic fossils everywhere obtrude, endless in variety of organizations,—some of them in groups, —some single,—most of species wholly extinct; but very many, of *magnitude so enormous,* that the present scale of vegetable and animal kingdoms, would not suffice for the maintenance of similar organizations. A few groups of them would now depopulate the earth, and turn it into a desert:—nay, a solitary specimen from their more enormous masses, would exhaust a whole region's *present scale of food!*

And yet such is the distinctness and elaborate precision of their several constructions, that their classifications may generally be traced within the respective genuses of carnivorous, herbivorous, and granivorous natures, with a correctness equalling that of present animal diversities. Where this precision is not obtained, it is from mutilation in the fossil, not from any incongruity of original organization.

A scale of *physical organization*, analogous in symmetry to the present, but of grandeur consonant to the wants and habits of creatures greatly surpassing man's actual stature, must therefore have reigned throughout this planet, FOR MANY AGES.

And lo! on further perforations, whole regions beneath the Earth's surface display an exhaustless luxuriance of vegetation, befitting such gigantic consumers.

Here a description of those internal worlds might follow, the magnificence of whose sections, wheresoever the Earth's surface is undermined, excites awe, as well as astonishment. Trees might be cited to have flourished therein, whose individual expansions emulate present groves, and of appropriate loftiness. Whole forests of similar exuberances might be dwelt on, with an herbage rivalling present shrubs, and shrubs out-topping present forest trees. The divers races of their aboriginal inhabitants, reposing in fossil conservation, within longitudes and latitudes, of present geographic *remoteness* towards their natures;—but which, at those far distant epochs, displayed *soils* indigenous to them. Those indigenous soils having long ago amalgamated into the diversified strata of *gone by existences*, and of gone by regions! Strata, if viewed with reference to the ephemeral histories of PARTICULAR RACES, OF MODES OF BEING,—exhibiting the wrecks, the *ruins* of departed grandeur;—but,—beheld as RECORDS OF A PLANET'S VITALITY, displaying mediums of endless resuscitations.

As such—and *only as such,* can they find place in these pages.

But it is delightful to know, that similar details are in far abler hands.—The researches of science amidst these *planetary archives,* are daily ascertaining, that the gigantic productions, appertaining to each particular *portion* and climate of our globe, are everywhere *conglomerated around it;*—repeated planetary revolutions having rendered the circumference beneath the Earth's modern surface, an intesselation of,—*at first sight,*—INCONGRUOUS *organizations.*

To speak of the infancy of a science, is accepted phraseology. But geology *is not yet* in its infancy, —it is only bursting into being. When illuminated by astronomy, present geological intricacies will unfold themselves into results of the *combined actions* upon the Earth, of her *perihelion and her* POLAR DECLINATORY REVOLUTIONS, as exhibited through the maximum and minimum impetuses of rotatory oscillation: these combined agencies, rendering the productions of every portion of the Earth, in the sequence of ages, TEMPORARILY INDIGENOUS throughout its circumference, by orbicular changes, which gradually, but unerringly, and alternately, convert the polar regions of the Earth into her equatorial regions, and change her equatorial into her polar regions, in maintenance of the one grand principle of reproductiveness; namely, the extraction and diffusion throughout the planet, of the greatest possible diversity of elementary interchanges.

It may therefore be analogically assumed, that there existed upon this globe at a remote epoch, *a race* of tantamount importance in the scale of organization, with *that* held by the present human species.—A race, evidently,—from the gigantic proportions of its works,—possessing physical powers far surpassing man's actual compass,—though possibly, for reasons further on advanced, *not* of corresponding *mental* expansion,—and very probably of organic modifications widely differing from those, which *man at present* exhibits: but like the *present race of man,* having the faculties of design and execution concentrated within *itself,* and thence possessing, like man, the paramountship of the Earth's planet during the period of its continuation.

WHENCE *therefore*—originated the former grandeur of the Earth's organizations?—WHEREBY was it maintained?—and WHEREFORE has it diminished?

These are stupendous questions!—probably beyond the present scope of geology—but to which, the sister science of astronomy—as before premised, may, perhaps, furnish solutions. Let us try.

Our attention has hitherto been chiefly confined to elementary interchanges within our solar system. But if we look *abroad*,—that is, *beyond that system*, we shall find the Earth enjoying far mightier modes of renovation.—We shall in this place simply direct the reader's observation to the general importance *towards this planet*,—of its *polar stars* :—reserving investigation into their *actuating laws*, for a subsequent part, wherein those laws will be found developing themselves.

Every one bears in mind, that our present north polar star is in Ursa Minor :—but probably every one is *not aware*, that 12,500 years ago, another, and a very different star, was the Earth's north polar star :—and still less, that 12,500 years hence, that *other star*, will *again become this planet's north polar star*.

Without speaking irreverently of our present beneficent polar star, all must perceive the *inferiority as a luminary*, of the cold, dull, death-like majesty of the dim Ursa Minor, compared with the glowing splendours of the superb Vega,—that *north polar star of the Earth*, at far distant epochs, both as relates to past, and to future time ; that is to say, as relates to every alternate period of 12,500 years, past, as well as to come.—Nor can a doubt exist, on *considering the importance of magnetic* *agency in nature's economy*, of the superiority of VEGA'S ORGANIC IMPETUSES, over those of our present Ursa Minor polar star.

From the comparatively ephemeral nature of existing races, the stupendous revolutions of the Earth's poles, create little interest—but when researches among the gigantic convulsions, and the gigantic fossils of remote periods, shall be conducted with a reference to POLAR STAR EPOCHS, the data of their *corresponding alternations* will furnish splendid illustrations of geological phenomena.—Take for instance the term of 100,000 years — a term barely comprising four of our polar revolutions;—in planetary vitality, a *mere dot* as *to time*:—and yet what geological submersions, what organic subversions must take place, in a period of 100,000 years! Submersions and subversions, we repeat, awful in organic vicissitudes, but essential to planetary renovation, and to its consequent vitality.

In referring to Astronomy we refer, in fact, to the laws of planetary organization, it being the province of that science, to ascertain the properties and courses of celestial bodies;—the conjoint action of those courses and properties, determining the nature of planetary revolutions:—the operations of physical Astronomy, and of Geology, always going on, *hand in hand*, as future ages will testify.

But to obtain clear apprehension of this harmony, it is necessary to have straightforward views of the *practical laws* of Astronomy. This is at present, difficult to obtain, its laws being entangled and distorted, by actual "*scientific*" (as it is *called*) phraseology, into a maze of contradictions, such as few persons have taste or time to penetrate: and the sublimest of sciences, the one whose laws are the simplest, and the most expanding to the best feelings of our nature, becomes a sealed book to the mass of mankind.

The first mystification to remove, comprises the *false position,* in which *this phraseology* places *the Earth.* It begins by stating, that "*the Earth moves round the sun:*"—and in all its subsequent details, calculations, &c., it makes, *not* merely all *other* celestial bodies move in reference to the Earth's *stationary accommodation,* but the very sun itself, around which, it primarily stated, that the Earth travelled once in every year, that very sun itself, it makes whirl around the Earth every twenty-four hours! Into a similar abortive confusion it plunges the inquiring mind,—then, leaves it to *grope* for astronomical facts!

The Earth, so far from being stationary, is a body of surprising activity, maintaining simultaneously, no less than three distinct movements;—each movement being attended by its contingent consequences,—and each consequence accomplishing the express and distinct purpose of original intention. All the three movements exhibit spiral courses of ellipsical form; and the clear apprehension of these distinct motions, with their attendant phenomena, would explain many a geological wonder, by illustrating the provisional care, whereby the greatest possible variety of elementary exchanges is obtained throughout every planetary body, by *systematic continuity* in its globular movements. Because it must be borne in mind distinctly, that there are, in fact, no *permanent* polar or equatorial regions, or northern or southern hemispheres, in the Earth's *construction;* but that, from *precision in the Earth's orbicular and polaric revolutions,* every part of the Earth's planet is carried, successively, and in the course of revolving cycles, within *certain astronomical positions* towards *certain other celestial bodies;* namely, towards its *permanent sun,* and its *varying polar stars,*—whereby every portion of its globe *assumes in turn,* the functions of arctic,—antarctic,—and equatorial regions, in accordance with the *grand renovatory principle* of all nature's agencies, *Rotatory Oscillation.*

From the data of this *systematic continuity,* the astronomical instructor should set forth,—and upon *it,* stedfastly keep sight. The moment he attempts, what he calls "simplifying his subject" by illustrating any proposition from assumed *motion of the sun,* he leads both himself and his pupil, into a labyrinth of contradictory absurdities. This is experienced every day in various (otherwise) excellent treatises and lectures on astronomy. For, were the *motion of the sun,* (so frequently assumed in what are called "*explanations*") to take place *practically even for a second,* all the planets would be jostled together!—Were the Earth, or any other planet, *stationary for a second,* it would be annihilated!—and as to a planet's "retrograding in its course,"—a common incident in *every almanac,*—actually to take place in SPACE, chaos would come again,—at least within *that* solar system!

The astronomical facts thus distorted by technicalities into indefinite abstrusenesses, are of the simplest practical character. For instance; the solar planets of our system are a community of very active bodies, diligently revolving round a common centre, at different relative rates and distances;—and consequently, they are perpetually overtaking and passing one another. When any one of them overtakes and passes another, the planet overtaken, seems to the planet overtaking it, and while in the act of passing, *hardly to move at all:* this ordinary deception of relative ratios, technicality calls "a planet's becoming stationary:" —and after having passed this overtaken planet, it seems to the inhabitants of the more rapid planet, to go back again, towards the stars, *along which* it has *just been travelling.* This distorted imagery, technicality denominates, "a planet retrograding in its course."!!

Any person may obtain practical proof of the delusion attending this planetary imagery, by taking an airing round a central point, in company with other carriages, all circulating around it, at different rates and distances:—The above proof of optical delusion may then be obtained, simply by drawing the check-string of his own carriage, while in *the act of passing an overtaken carriage.* At the moment of *passing by*, the overtaken carriage will hardly seem moving at all:—and after passing it, the overtaken carriage will appear to the observer within the more rapid carriage, as *going back again* towards the groups of trees, &c. &c., along which the overtaken carriage has just progressed.—But this, as every one knows, is an angular deception, attending the changes of relative positions in the progressing carriages, both with reference to themselves, and to the groups of trees, &c. &c., and is immediately dispelled by the *check-string process;* since the observer, *becoming thereby stationary himself*, will witness the continued progress of the *overtaken carriage* in its own circulating course, regardless of external contingencies, and in a direction *from* the deserted groups of trees, &c. &c. The check-string of the Earth's globe, not being equally attainable, it is hoped that common sense will supply its place, by vigorous investigation, and will erase such perplexing puerilities from genuine science.

CHAPTER V.

THE GENERAL MECHANISM OF THE EARTH'S PLANET.—DIFFERENCE BETWEEN THE SIDEREAL AND THE TROPICAL YEAR.—THE EARTH'S EXTREME ACTIVITY.—ITS THREE SIMULTANEOUS MOTIONS :—VIZ.—ITS DIURNAL ROTATION,—ITS ECLIPTICAL REVOLUTION,—ITS POLAR REVOLUTION.—THE IMPORTANCE OF THEIR CONJOINT ACTIONS.

THE three simultaneous movements of the Earth's planet, are as follows :—each of them, it will be seen, persevering in continuous functions ;—and all coalescing in one determinate end ;—namely, the maintenance of reproductiveness, through the widest possible diffusion of elementary interchanges.

The three simultaneous movements of the Earth's planet are as follows :—

1. The Earth's daily rotation ....
2. The Earth's ecliptical or perihelion revolution
3. The revolutions of the Earth's poles ....

} With contingent consequences.

For clearer apprehension of these practical movements we must remember, that there are two different astronomical computations in relation to the Earth's course round the sun: namely, the sidereal and the tropical year.

The sidereal year, when divested of technical obscurations, comprises the period elapsing between the passage round the Ecliptic of any *given spot on the Earth's surface*, from beneath any particular star, and the next annual return of that spot, beneath the same star :—such period comprising 365 days, 6 hours, 9 minutes, 9 seconds, and a fraction.

The tropical year, when equally divested of technical obscurations, comprises the period elapsing between the Earth's closest approximation towards the sun of one year, in her annual circuit around him, and her closest approximation towards him of the next year :—such period comprising 365 days, 5 hours, 48 minutes, 49 seconds, and a fraction. The tropical year therefore is shorter than the sidereal by 20 minutes and 20 seconds, that is, it takes any given spot on the Earth's surface longer by 20 minutes and 20 seconds, to arrive twice consecutively beneath any particular star, than for the Earth to arrive twice consecutively at her closest annual approximation towards the Sun. The sidereal year, therefore, has reference to the Earth's annual revolution towards the stars, and the tropical year to the action of our Sun upon the Earth's watery masses and the progressions of her seasons, together with the alternations of her hemispheres.

First Movement.—The Earth's daily rotation.

By this motion, the Earth turns once around herself, in very nearly every successive 24 hours,—

producing thereby upon her globe generally (that is, throughout the major portion of it) 365 successive alternations of tropical days and nights, in a period of 365 days, 6 hours, 9 minutes, 9 seconds, of sidereal time,—and by this fractional difference of 20 minutes and 20 seconds, between the sidereal and tropical years, causing a corresponding recedence in the commencement of each of these 365 tropical sequences. No two successive tropical sequences therefore can present the same superficies of the Earth's globe towards other celestial bodies;—to the manifest furtherance of the greatest possible variety of elementary interchanges, between the Earth and other celestial bodies.

Second Movement.—The Earth's ecliptical, or perihelion ray revolution.

The Earth's course round the Sun, we must remember, like that of all other bodies,—*is spiral,* and as such, of ellipsical or oval form; and the station of the Sun within this ellipsis does not lie at the centre, but about two-thirds from one of its ellipsical extremities. Consequently when the Earth, in her solar circuit, travels round the ellipsical portion comprehending the station of the Sun, the Earth is proportionally progressing in vicinity towards him; and when she reaches *the extremity* of this nearest ellipsical portion, she comes within *closest solar* approximation. It is at this moment of closest approximation, that the Earth passes,—annually—within the Sun's perihelion ray.

By movement the second, therefore, the Earth revolves around the Sun in about 12 months; that is, she travels around the ecliptic in 365 days 5 hours 48 minutes and 48 seconds, or in one tropical year, from her closest approximation towards the Sun of one year, to her closest approximation to him of the next; the inclination of the ecliptic to the equator being 23° 28′. These annual approximations therefore constitute what are termed the Earth's perihelion point passages, and each of them takes place 50 seconds and a fraction, short of the preceding one in the ecliptical course.

In these annual or ecliptical circuits, the velocity of the planet's course is materially augmented during the period of solar approximation. The Earth's annual passage around this her perihelion ellipsical portion, is rendered thereby briefer by nearly 7 days, than her passage around the opposite or remoter ellipsical extremity: and hence the corresponding brevity of 7 days, in our present wintery portion of the year: the present perihelion conjunction taking place on the 30th of December.

Great intensity of solar action is induced upon the portions of the Earth's globe thus immediately directed towards the Sun: an intensity of action affecting the masses of the Earth's waters, and thereby attracting an accumulation of them within that hemispheric division. Consequently, whichsoever portion of the Earth's globe is recipient of approximate solar action (or of perihelion ray conjunction) acquires the widest accumulation of waters, and constitutes the Earth's southern hemisphere of that epoch:—an accumulation, we shall find, in constant, but, to existing races, imperceptibly minute circulation around this globe. The period between these consecutive perihelion conjunctions is somewhat accelerated by the diurnal rotation of the Earth; whereby she is carried,—although very minutely, yet—somewhat in ecliptical *advance* of where she would be without such rotatory adjunct.

If the Earth's solar course were circular, the passage of the Earth within perihelion conjunction, would be *unvaried* both as to time and locality; and the position of the watery masses would remain stationary. But, from the above spiral, or ellipsical nature of the Earth's circuits, we find the above retardation amounting annually to 50″, and causing a corresponding annual variation of position in the watery masses. Small as this annual retardation may appear at first view, yet its continuity carries the site of those masses around the Earth's globe *every* 20,937 *tropical years;* rendering thereby *every portion* of the Earth's *circumference, in succession,* the northern and the southern hemisphere of the planet. By the Earth's annual course round the Sun, therefore, she accomplishes the annual alternations of her seasons;—and by this fractional retardation in her annual *perihelion ray conjunction,* she carries both the circulation of those seasons, and the site of the watery masses, once around her globe in every 20,937 tropical years; thereby rendering each of her hemispheres, in turn, the north and the south hemisphere of her planet, during every alternate 10,000 years, together with the co-operative seasons of each hemisphere.

The above fractional difference necessarily retards the Earth's annual spring and autumnal crossings of the ecliptical line, in corresponding ratios.—In other words, it causes a retardation* in the Earth's equinoxes of 50¼ seconds every year.

The grand principle of nature's works, universality of reproductiveness through universality of elementary interchanges, derives two-fold furtherances from the Earth's ecliptical revolutions. First, from the circulation of the Earth's seasons every 20,937 years around the ecliptic, the greatest variety possible of *elementary interchanges* is wrought, throughout the planet:—and secondly, from the hemispheric alternation in each of the above periods, the widest possible invigoration is effected. Because, we must observe, that in consequence of the watery accumulation in the southern hemisphere, the northern hemisphere contains the *largest*

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* This retardation is what is understood by the term of, "the precession of the equinoxes."

portion of habitable surface, with the widest demand for alimentary productions. The above hemispheric alternations, therefore, exhibit instances of provisional care; since the regions under the impetus of a northern vegetation for one 10,000 years, recruit during the next 10,000 years, embedded within the ocean of THAT PERIOD's southern hemisphere, and thus are fertilizing, to meet the next northern impetus, by the reaction of comparative repose. The principle of vegetative invigoration throughout both hemispheres, by alternate luxuriant energy, and antagonist contraction, being carried on with a progressive minuteness imperceptible to actual races; in accordance with the primary law of nature's operations—namely, the renovatory action of Rotatory Oscillation.

Third Movement.—The Revolution of the Earth's Poles.

The third movement of the Earth exhibits a further instance of creative prescience;—combining a precision of design, with elaboration of *execution*, surpassing perhaps all other manifestations within human knowledge.

The third movement comprises the inclination of the Earth's north and south poles as directed around relative north and south polar ellipses of 44½ degrees each; and as simultaneously accomplished by them, every 25,868 years and a fraction. By the above conjoint revolution of the Earth's north and south poles, her climates are carried backwards, in rotatory oscillation, with a progressive minuteness equally imperceptible to actual races, with that of the ecliptical revolution, and equally operative in furtherance of elementary interchanges.

The distinction between the second and third movements of the Earth, must be closely attended to, in reference to astronomical influences upon geological phenomena: movement the second, (or the Earth's ecliptical revolution,) regulating longitudinally, the position of the Earth's two hemispheres, and consequently, the alternation of the planet's *seasons*;—and movement the third, (or the Earth's polar revolution,) regulating, latitudinally, the progression of the *climates*, wherein these successive seasons manifest themselves. The necessity of attending to this distinction will appear on investigating (further on) the agency of elective polarity upon planets.

The importance of the *conjoint action* of the ecliptical and the polar revolutions, will be then evident.

CHAPTER VI.

THE GENERAL MECHANISM OF THE EARTH'S PLANET CONTINUED. —THE EARTH'S POLAR REVOLUTIONS.—THEIR GENERAL MACHINERY—THEIR IMMENSITY—THEIR REGULARITY—THEIR CONTINUITY—THEIR COUNTERBALANCING ACTION UPON THE EARTH'S ECLIPTICAL REVOLUTIONS.—RELATIVE POSITIONS OF STARS TOWARDS PLANETS.—PLANETARY ELECTIVE POLARITY THE UNIVERSAL CONNECTIVE MEDIUM.

WE next proceed to the specific action of polar revolutions upon the Earth's planet, in the regulation of its organizations, as well as of its climates; the precision marking polar regulations, producing that primary wonder in planetary machinery, THE REVERBERATORY EQUIPOISE OF THE EARTH'S POLES!

From the oblique position of 23½ degrees, in which the Earth travels round the Sun, her poles do not, as we are aware, point directly, either north or south; but the north pole points a little below the north, and the south pole a little above the south point, of their respective hemispheres; and neither of the Earth's poles point *immoveably* to any fixed celestial object; but each pole points progressively around a small ellipse of 44½ degrees, comprised within its relative hemispheric portion of the heavens.* These antipodes ellipses, like all other parts of the heavenly concave, are full of stars,—and it takes the Earth's north and south poles 25,868 years and a fraction,—(as before stated,) to carry the direction of their respective points of inclination around the superficies of these antipodes ellipses; each of such conjoint ellipsical circuits comprising one polar revolution, and comprehending the above period of 25,000 sidereal years.

Countless as may appear to us the multitude of stars visibly irradiating the earth's hemispheres, and thence seeming to belong to our solar system, yet their number fades before the myriad hosts which crown the empyrean of space. But comparatively small as is the number of stars visible to us, yet, from the magnitude of their relative distances, no single group (or constellation) among them, wears the same configuration in different portions of our solar system. For example :—this starry multitude assumes different groupings, as beheld by an inhabitant of Mars, to what are exhibited towards ourselves, as Earthites. Towards Jupitereans and Saturnites, those groupings are superseded by others, so widely dissimilar, that the ablest Earthite astro-

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* The distance between Ursa Minor and Vega is 50°—but since the direction of the Earth's pole is only carried to 5 degrees towards Vega, and to half a degree towards Ursa, the ellipsical circuit pursued by the poles' inclination, only comprises 44 and half degrees.

nomer would be puzzled to recognise *therein*, the objects of his nightly observations;—and in Herschel, a fresh segment of stellar magnificence expands to view; while corresponding portions of the stars adorning the hemispheres of *the Earth*, become veiled from sight.

But throughout these diversified configurations, each definite group maintains the same aspect towards each definite planet; that is, no alteration, either in magnitude or grouping, is perceptible at any portion of a planet's solar, or annual, revolution. The minuteness of planetary movements, as compared with the *immensity of stellar remotenesses*, being such, that even from the opposite sides of a planet's course, no variation is visible, either in the magnitude, or position, of surrounding stars.*

From the provisional care everywhere abounding, the same benign prescience doubtlessly governs the *positions of planets* towards surrounding stellar groupings, which determines the localities of earthly productions, towards the Sun;—and no doubt these groupings exhibit aspects the most generally favourable towards all the solar planets:—but, from the polaric affinities incidental to each *distinct planet*, towards *certain definite stars* within these stellar groupings, the physical agency of *particular stars*, upon *particular planets*, is especially influential; each particular planet, from the express equipoise of its poles, being under magnetic action of the antipodes stars towards which those poles relatively point. Hence in the above stellaric agency we commence tracing the action of *Planetary Elective Polarity* in celestial machinery: that all-pervading agency, whose IMPETUSES, as endless in their *varieties*, as are the *natures* to be operated upon,—intertwine the properties of all integral portions of the UNIVERSAL SPHERE, within one mighty circulation of mutually developing,—mutually interchanging elementary vitalities.

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* Except, *perhaps*, in *that* of Herschel—from the superlative circumference of its orbit. Sir John Herschel computes the distance of the stars to exceed 192,000,000,000,000 miles.—See Astronomy, page 378.

The agency of elective planetary polarity exhibits the unity of design attending all nature's operations. It comprehends the action and reaction of what may be called the CONNECTIVE DIVERSITIES of POLARITIES, which exist in organic bodies: as follows.

The polarity of an organic body, of whatsoever magnitude, depends, as we have seen, on its express organization;—that is, on the proportional combination of angular inequalities of superficies, with the greater or lesser polar obliquity, inherent in it: each specific combination thereof, by determining the polaric obliquity of each particular body, determining likewise, the nature of that body's properties. And such is the endless diversity in these combinations, both as to quantities and qualities, that no two classifications among them, possess identical organic agencies; while each organic combination impresses the body it actuates, with the definite affinities and repulsions, incidental to its polaric nature.

The impetuses, therefore, of elective polarity actuate elementary interchanges among planetary bodies, on the same unity of *connective polaric diversities,*— though on mightier scale,— which governs the mutual relationships of attraction and repulsion among *atoms;*—namely, by the combination throughout each planetary *class,* of definite angular inequalities, with definite greater or lesser polaric obliquity, as inherent in each class;—the manifold diversities in combination whereof, distinguishing each specific class,—and differing more or less from those of all other classes. Hence the actuating impetuses of planetary interchanges are regulated, like those governing *component particles,* by the greater or lesser organic diversities, in the operative bodies.

Now, since all aggregations are COMPOSED of ORGANIC BODIES — or particles, — *systematically polarized,*—it follows,—that the obliquity of every aggregation of particles, understood by the term "*a planetary body,*" *is determined by the combined angular and polaric diversities inherent in its component particles:*—and therefore, since proportional obliquity in planetary bodies is grounded on the same minute distinctness of angular and polar diversities inherent in their component particles, it likewise follows, that classifications in *relative polaric obliquities among planetary bodies, must be as multitudinous as among atoms.*

Here the field of empyrean VASTNESS opens before us ! *

From a multitude of obliquities thus countless, there are no two antipodes portions of space, towards *which,* the *opposite extremities* of some planetary body or other, viz. the poles of some one planet, do not point ;—because the poles of every planet necessarily point in accordance with the planet's obliquity :—that is, towards antipodes parts of the heavens, of altitudes corresponding with that obliquity ; and since the heavens are everywhere full of stars, and every star has its antipodes, or, counterbalancing star, the poles necessarily point towards *determinate antipodes stars ;* which thence become the polar or influential stars of that planetary body, through whatsoever period *it maintains intersectional equilibrium*, towards those particular stars. Hence *connective diversities* in polaric inclinations, are as innumerable as they are minute, the obliquity of no *two* planets being identical.

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* We must not be supposed affirming that, because all the component particles of each particular planet possess *corresponding* attractive and repellant polarities, that the natures of the component particles in each planet are the same. On the contrary, the variety of natures, properties, qualities,—(whatsoever they may be called) efficient for the collective functions of a planetary body, must be countless :—but for the *formation of any* planetary aggregation, its component particles,—however differing in rarefaction, &c. &c.—must possess a general polaric coalescence among themselves. Hence polaric equilibriums among planetary bodies must be as numerous as among atoms.

But amidst these diversified obliquities, the action of *one* pole of every planet is invariably attracted towards the polaric star of *its* hemisphere, through impetus of *positive* elective polarity;—and *that* of the opposite pole, towards the polaric star of *its* hemisphere, through influence of *negative* polarity; —the equilibrium of the intermediate planet being thereby *maintained, during the many ages* throughout which, the planet's poles preserve *that intersectional direction.*

Here we must remark, that were this polaric inclination immutable, the same stars would always constitute the planet's polar stars;—and the *same species of elementary* impetuses, &c. &c. would remain in action upon the planet.—Consequently, the scales both of the planet's climates and organizations, would be invariable. But *this* invariability would prove the ultimate deterioration of the three bodies, viz.—the planet, and the two stars, from the exhaustion incidental on CONTINUOUS ACTION; —such *operative fixity* being, as we have seen, *contrary* to the primary law of nature,—namely, universality of reproductiveness, through universality of elementary interchanges. In accordance therefore with the universal law of rotatory oscillation, the polar direction of every planet *progresses,* in the course of ages, around its polar ellipses, with the above-mentioned minuteness of progression; the inclination of the poles being thereby directed towards successive and fresh antipodes stars, (as further on explained,) and which fresh stars become, in their turn, the polar stars of the planet.

We proceed to inquire whence originate progression in polar revolutions thus essential to general renovation?

Our inquiry will terminate speedily, on recalling to mind, that, whatsoever may be the obliquity or inclination, inherent in its poles, the planet itself has steadfastly continued its *annual* or *ecliptical courses around its sun;*—the spiral nature of which courses, by carrying the orbits of the planet successively from one boundary of their ecliptical path towards the other boundary, and back again in ceaseless rotatory oscillation, causes—in the *sequence of ages*—the above progressive series in the planet's polar inclinations. Thus, through the laws of rotatory oscillation, the polaric inclinations of every planet have their *periods,* as well as their commencements; the duration of each of these intersectional polaric equipoises being determined by the planet's courses around its Sun,—the spiral nature of which, in a definite succession of ages, carries the inclinations of the planet's north and south poles from one antipodes intersectional inclination towards the next, in their respective ellipses of stars, until their entire circuits are conjointly accomplished by the planet's poles.

For clearer apprehension of the—at present—mystified phenomenon of polar revolutions, we shall, in what immediately follows, attach ourselves exclusively to the instrumentality of our *north pole;* and attend its inclination in one of its revolutions around its polar ellipses,—simply requesting attention to *one fact;*—namely, that the several actions produced by the following progressional circuit of our north pole,—as consequent on its polar revolution,—are produced in corresponding proportion, but in *contrariety of operation,* upon the Earth's opposite, or south pole: the magnetic action upon the north pole, being of *positive,* and that on the south pole, being of *negative,* polarity.

* The stars shining at the opposite extremities of the northern ellipses around which our north

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* Our present north polar star is abstractedly denominated Abruccabah, and is a star of the second magnitude in the tail of Ursa Minor, about 1 degree and 3 quarters from the Earth's present celestial pole. The directest inclination of the Earth's north pole towards this star, is computed for the year 2103; and its farthest recedence from its direction towards it, is computed for the year 14,998, when our north pole will point in the opposite direction, and towards Vega, in Lyra.

pole points, are of very dissimilar aspects. One of them is a very dull-looking star, called ordinarily Ursa-Minor, in the constellation of that name; and the other, at the opposite ellipsical extremity, and 50 degrees from Ursa, is a very noble star, called Vega, the alpha star in the constellation of Lyra; *the splendid Vega,* the Gem, the peerless Gem of our northern hemisphere;—and whence *she never sets,* but wherein she reigns in *paramount magnificence.* For very many ages past, the direction of our north pole has kept pointing along the segment in its polar ellipses, containing Ursa-Minor; and accordingly, that dull-looking star has for many ages past been our north polar star. But 12,000 years back the direction of our north pole was traversing the opposite segment of its ellipses; namely, the segment containing Vega;—and the magnificent Vega was *then* the Earth's north polar star:—and, moreover, 12,000 years hence, she will *become so again.* That is, will so become, when, in relative sequence of polaric obliquities, the direction of the Earth's north pole AGAIN traverses *the segment of its starry ellipses,* containing Vega.

Remote ages record the inclination of the Earth's north pole at 12 degrees from Ursa: since that period it has arrived within 1 degree and some seconds' declination of Ursa; and the ellipsical figure of the circuit, will carry its declination to within half a degree of that star, when a proportional series of ecliptical circuits will carry the pole's direction towards the opposite segment of the polar ellipses—consequently towards Vega—which, 12,000 years hence, will once more become the north polar star of this planet.

A striking corroboration presents itself of Vega's superior magnetic influence, as compared with Ursa's, in the following instance of provisional care. In each polar revolution, the inclination of the Earth's north pole is carried within half a degree of Ursa; thereby obtaining the strongest action possible upon the Earth, from the comparatively feeble magnetic properties of that star: while at the opposite extremity of the ellipses, the inclination of the north pole only approaches to 5 degrees of Vega; thereby *shrouding the Earth from the maximum impetuosity of Vega's action*

The more we consider *the action of a polar star upon a planet,* the more its sublimity, as well as intensity, become apparent. There is nothing analogous to *this action,* in nature! It exhibits the intenseness of continuity, with the stillness of death:—and in this intenseness of continuity,—in this stillness of death,—consists the *superlativeness* of its VITALITY! The action of the Sun upon a planet is very different. From the constant change in position of the planet towards the Sun, by the planet's own revolutions and rotations,—to ordinary perception, *the Sun* it is, that appears in ceaseless activity, and in a hundred different successive spots. The *solar* action, therefore, appears to be, *what it is;* replete with exuberant vitality, and joyful animation. NOT SO THE ACTION OF A POLAR STAR. From minuteness of progression in planetary development, *that progression,* is imperceptible to any actual generation,—nay, very nearly so, to a succession of them; and hence, the relative position of a planet and its polar star, appears immutable, to man's circumscribed perceptions. To man's ephemeral faculties, therefore, a polar star seems always in one spot, — always THERE — that is, fixed immutably therein. Immutably immutable! We examine Ursa Minor through a telescope: every other object seems — from the celerity of the Earth's motion,—to be flying across its field, all vital energy, ere we can investigate it.—Not so Ursa Minor.—A telescope once pointed towards Ursa,—*there,* its dim, sullen majesty is seen!—*There* it is, in the very centre of the telescopic field; —and *there* it will be found, whensoever we look at it again!! We gaze on it, till sight is wearied! We pause, to revive ourselves. We look around! Every other celestial body has changed its position during our polar star inspection!—all nature has evidently been ALIVE! in full expansion of vivifying agency!—We return to our telescope! Yes! THERE it is again! The same dull, death-like stillness, reigning around it! No! there is nothing in nature, analogous to polaric action.—That is—to the action of *one constant,* one invariable, effluxial stream, pouring itself from one apparently *fixed* celestial body, (Ursa Minor for example,) upon—*one spot in space*—(namely, the Earth's north pole,) which definitely is pointing towards that stream. What intensity of force!—What irresistibleness of continuity! Here we are referring to our present diminutive polar star, in the Little Bear. But let us suppose *that* polar star to be Vega, with *her glowing splendours* all around her! What an accumulation of polaric energy, must a constant, an invariable effluxial current from VEGA, diffuse throughout our entire planet! penetrating,—pouring,—within the very vitals of our globe, AND EXPANDING ITS EVERY PARTICLE! Let us further suppose *the continuity of this intensity* during many centuries! Is it probable,—is it possible, that under an influx thus paramount, the force of physiological operations upon this planet, (*consequently the symmetrical scale of its organizations*) should *remain as at present?* Must not organic operations receive an impetus from a like MAGNETIC SPRING-TIDE,—propelling into what might, *now,* be thought *miraculous?* nay, could any one of the three kingdoms, the animal, the vegetable, or the mineral, as at present constituted, could any one of them *sustain* such a torrent? Would it not SUSPEND, instead of invigorating, their animation?

True it is, that it will be near 10,000 years before the direction of our magnetic conductor, the north pole, again commences pointing towards the Lyratic segment of our Northern ellipses (that is, towards the segment under the polaric afflux of Vega), and that 2000 years more must elapse, ere the pole reaches the maximum of Lyric forces. In other words, that it will be ten or eleven thousand years before Vega again becomes the Earth's polar star: a period some may consider sufficient to naturalize progressively, the present economy of this planet, for any stage of physical excitement. —But this is supposing a succession of miracles.—Miracles too, marring Nature's works, by *crippling her energies*—not expanding them; and *that* for no adequate end: since the subject of our attention is *not* the preservation of any particular race or mode of being, but the conservation, during countless ages, of the *principle of reproductiveness* throughout a celestial body, as sustained by the immutable laws of rotatory oscillation. And here we must repeat, that nothing short of miracles, could enable our present beautifully symmetrical,—but (COMPARED WITH THE RELICS OF FORMER MAGNIFICENCE) our feeble, and diminutive scale of organization, to WITHSTAND the enormous—the overwhelming magnetic effusions of a star of Vega's magnitude.

A familiar illustration shall be attempted of the conjoint series of progressions in the Earth's poles, during one polar revolution, whereby the above successive influences upon the planet are assumed to be induced.

Throughout what number soever of a *planet's revolutions around its Sun,* its north and south poles continue to point towards the same stars of their relative ellipses,—the stars so pointed towards, will continue to be the planet's polar stars—and the planet will continue within their intersectional action more or less influentially, according as the inclinations of the poles, remain pointed more or less directly towards those stars. But when in the sequence of ages, the spiral oscillation in the planets' ecliptical circuits, carries the conjoint progresses of its poles from one antipodes combination of actuating polarities towards *that* of the antipodes stars next in sequence within their relative ellipses, then those other stars—thus next in sequence—become the polar stars of the planet, in like manner, during whatever number of ages, the intersectional obliquity of the planet is directed towards *them.*

From these progressive sequences, therefore, the Earth comes within polaric influence of each of the stars lying between Vega and Ursa (conjointly with those of *their* respective antipodes stars) in her progresses towards the minimum forces in Ursa;—and, in like manner, with the stars lying between Ursa and Vega (conjointly with those of their respective antipodes stars) in her progresses towards the maximum forces in Vega.

CHAPTER VII.

PLANETARY RENOVATION.—ITS SECOND, OR PERIODICALLY CONCUSSIVE MODE.—WHENCE ORIGINATING?—ITS STUPENDOUS VISIBLE RESULTS.—ITS IMPETUSES NECESSARILY EXTERNAL.—THE CONJOINT ACTIONS OF THE EARTH'S POLAR AND ECLIPTICAL REVOLUTIONS.—GEOLOGICAL SKETCH OF THE EARTH'S STRATA.—THEIR DIVISION INTO FORMATION CLASSES.—THEIR CONSEQUENT PRODUCTIONS.—AFFINITY BETWEEN PLANETARY RECIPIENCY AND MAGNETIC MACHINERY.—UNITY OF DESIGN THEREBY DEMONSTRATED.—UNDULATORY SCALES IN ALL ORGANIZATIONS.

Thus, in the course of every polar revolution, we find the inclinations of our north and south poles revolving around the starry segments comprising their respective polar ellipses, and thereby carrying the planet's equilibrium around one entire circuit of intersectional agencies of its successive polar stars, in every 25,868 years.

During the term of traversing each of these starry segments, the poles necessarily imbibe the qualities peculiar to each express polaric combination, and a general, but nearly imperceptible, renovatory action, is thence maintained throughout the planet, during very many successive generations, as has been experienced by the Earth's present races under the intersectional polarities of our actual polar stars, Ursa Minor, and its antipodes star in the southern constellation of Octaus.

But when progress of polar revolution carries the inclination of the poles towards the antipodes stars next in sequence within their respective ellipses, the planet enters a fresh combination of magnetic and elementary properties, equally fraught with distinct and determinate polarities.—Because, since the properties of each star differ from those of all other stars—(or *where* would be stellar identity?)—it follows, that each antipodes or polar combination possesses qualities *exclusively its own;* that is, qualities in accordance with the natures and powers of its actuating stars;—and therefore differing more or less *in action upon the planet,* from the impetuses, both of the preceding, and of the succeeding antipodes combinations, in proportion to the greater or less dissonance in their respective natures.

At this portion of our subject we enter upon the second, or the more stimulant division of planetary renovation;—namely, *that of periodic revulsions,* the results whereof are testified by the organic changes and fossil remains everywhere abounding.

The action of renovation by *periodic revulsions* must frequently be convulsive throughout a planet, such convulsions being consequent on an entire change in polar relationships.

When a planet's equilibrium is carried within fresh intersectional action, it is evident that its *poles* have entered fresh polar influences, and imbibe the magnetic and elementary effluxes of fresh polar stars—such effluxes differing more or less, both in properties, and in proportions of those properties, from the former one. The transition of a planet from one combination of magnetic and elementary properties toward the next in sequence, must, therefore, be always attended with *planetary phenomena*:—and where strong polaric diversities exist in their successive natures, these transitions must be fraught with *organic convulsions*, highly developatory of planetary invigoration, but very tremendous in action: convulsions, causing the submersions of strata,—the dismemberment of continents,—the extinction of whole species,—and other intense and awful changes in the Earth's organization and productions, everywhere discerned by geological research: the results of some of those convulsive submersions appearing, to the eye of Science, as if forming new eras in planetary existences; as if marking the termination of antecedent,—and developing the epochs *of fresh organic aggregations!*—in some instances, the CHASM between the successive modifications being so immense as to preclude possibility of any INNATELY CONNECTIVE LINK between their *stages*. In one stage thereof, the operations of nature appearing as if simultaneously suspended!—cut short!—as if ended!—and, in the next, as having recommenced as spontaneously,—and *that*, in fashion so different, in many instances so *discordant* from the antecedent, —that is, so dissimilar in mode, materials, design, nay, even so *contradictorily capricious*, as to establish the NECESSITY OF A FOREIGN IMPETUS for such recommencement.

Such foreign impetus, with its *connective link* between, otherwise, incongruous organic stages, is found, in the dissimilarity of action upon the planet, of its successive stellaric combinations; and that dissimilarity of action arises from the diversified properties inherent in their respective magnetic and elementary effluvia. The fresh impetus given the planet on transition from one intersectional, or polar star agency to the next in ellipsical succession, causing the organic chasms and strata submersions found in this planet's modifications, and these, being greater or less, in proportion,—first, to the nature of the stars towards which the equipoise of the Earth's poles is progressively inclining;—secondly, according to the degree of cooperation between the foreign impetuses and the planet's climates at the epoch;—and thirdly,—and very especially,—according as the planet's revolution progresses either towards, or from, the maximum ellipsical forces of Vega, or the minimum forces of Ursa Minor. But every passage of the Earth's polaric equilibrium, from one magnetic action into *that* next in sequence, being attended with more or less elementary convulsions, according to the natures of the successive polar stars; the modes of whatsoever existences are forming the Earth's population at each of these epochs, with the planet's general modifications, receiving novel impressions from each intersectional transition.

Hence the innumerable diversities both in fossil remains, and in the fluctuating organic scales which epoch after epoch are discoverable, throughout the planet,—and hence, likewise, the *convulsive subversions* in its strata, which perplex the scientific geologist;—who amidst a series of them evidently progressive in general planetary fertilization, encounters jarring masses, and sometimes mountainous districts, apparently at variance with that fertilizing progression; and beyond the internal planetary economy to propel. A summary geological sketch of this planet, by rendering these *anomalies* still more conspicuous, may show the necessary connexion between the internal organization of our planet, and some foreign impetus of sufficiently determinate action.

Geologists have already penetrated sufficiently below the present surface of the Earth, to ascertain sequences of *former external crusts* of this planet, of diversified appearances, qualities, and productions, —while, notwithstanding the fluctuations thus everywhere met with, they have found a scheme of fertilization carried on throughout the planet, from primeval barrenness, up to present exuberance. It is of these former *external crusts*, now amalgamated into formation strata, and imbedded beneath the Earth's actual surface, that Cuvier beautifully speaks, in his Essay on the Theory of the Earth, (page 253,) when,—adverting to his own geological researches,—he says, "By penetrating deeper and deeper into the series of strata, I rose higher and higher in the series of formation epochs. I shall now proceed upwards (in delineation of them) from the oldest formations,—make known the animals they contain—and passing from one epoch to another, point out the series which progressively make their appearance, in *proportion as we approach the present time.*"

According to the views of Cuvier, Humboldt, and other distinguished geologists,—the above series of *formation epochs* is divided into four classes: viz.—1st. into primary formations,—2dly, into secondary formations,—3dly, into tertiary formations,—and 4thly, into post-diluvium formations —(the present formation stratum of this planet)— each class thereof enumerating within itself its specific *strata transitions*. *The class of primary formations*, constituting as it were, the groundwork of future fertilization, the lowest or deepest portion of this primary class, is found to be of granite, gneiss, mica-slate, &c., in conservation by ponderosity, of the planet's internal mechanism; and this portion of primary formations is barren of organic fossil remains. But such is Nature's fertility, that the first transitional stratum or stratal transition in this primary class,—that is, the stratum immediately above the deepest portion,—contains rocks of lighter substance, with appearances of zoophites, fossil shells, and coral. The next transition stratum exhibits the first specimen of sandstone, in *old red* conglomerate or porphyry, together with fossil wood, and shells, &c. Such is the stride already made in *this*, the primary formation class—towards ultimate organic fertilization.

We come, 2dly, to the next division,—or, to the secondary formation class. Still clearer indications of vitalic energy are found within the first stratum of this class; which exhibits the first specimen of *Limestone*, with copper slates—together with beds of coral shells, &c. The next stratum contains a second and more advanced specimen of sandstone, with coal formations, and impressions of plants upon these, principally monocotyledonous—many being of tropical aspects, with trunks of palms, ferns, &c., affording evidence, already, of dry land: —that is, of a vegetation not confined to the waters, —but showing no traces yet, of fossil quadrupeds. The next stratum contains red conglomerate—and immediately above that, is the second limestone specimen, or that of magnesian limestone. The first fossil quadrupeds are found in the bituminous copper slate, a very little above;—and what is remarkable, they prove to be *reptiles* of the family of Lizards, and very much resembling the large Monitors living in the fresh waters of the torrid zone, of this day. The fossils of these reptile quadrupeds, denote their being amphibious. They are rare, but they are surrounded by innumerable fishes, of a genus now unknown, but which, from affinity to genera of our day, are apprehended to have lived likewise in fresh water. Hence, by analogy, the geological fact of a considerable surface of fresh water at this epoch.

The next transition stratum comprises a third specimen of sandstone, in the *new red* sandstone, together with fossil shells, corals, fishes, and vegetables. In the next stratum above, is a third specimen of limestone, called the stratum of the Alpine shell limestone, and which forms the basis of a great part of what now constitutes Germany, and Lorraine. It is very rich in fossil remains. In it, skeletons are found of sea tortoises, six and eight feet in length, and of another oviparous quadruped, of the lizard family, very large in size, and with a very sharp muzzle. The succeeding stratum appears rather a shallow one. It comprises a fourth specimen of sandstone, variegated marl, with fossil plants and shells. "Still rising amidst sandstone, and encompassed," says Cuvier, "by vegetation of bamboo, palms, and other tropical specimens, of enormous dimensions, we come to the stratum deposit named the *Jura limestone,* as forming the principal nucleus of that present chain of mountains." This fourth specimen of limestone, comprises both the Jura limestone and the Lias limestones, and contains shells, coral crustacea, lacertæ, turtles, fishes, &c. "It is here," continues this author, "that the class of *reptiles,* assumes its full development,—and shows itself under the most varied forms, and gigantic sizes." From their fossil remains, these reptile quadrupeds must have been terrific,—loathsome,—appalling! some being twenty feet, some seventy feet in length; many of the size of thrushes, having wings. These are called flying lizards.—The most monstrous among them seems to have been the Plesiosaurus. These still bear marks of the lizard family, but are distinguished from all other species, by a *neck as long as the body.* This neck was composed of thirty vertebræ;—a number surpassing *that* in any other animal, and which rose from the trunk like a serpent, and terminated in a very small head, in which all the characteristics of the lizard tribe were preserved. "If any thing," observes M. Cuvier, "could justify the hydras and other monsters, the figures of which are so often represented in the monuments of the middle ages, it would incontestably be *this plesiosaurus.*"

We have thus aimed at a cursory glance at the general, but somewhat awful agency of the secondary formation class; which, after exhibiting a fifth sandstone specimen above the Jura limestones, comprising green sand, or quador sandstone, and containing coal beds, fishes, lacertæ, turtles, &c. &c., terminates at the important transition stratum of the grand chalk deposit. We say awful agency,—since, in some of these secondary formations, nature's energy developed itself in modes appalling to our present conceptions, and, possibly, unsupportable to human existence. Absence of human fossils at such epochs, is not surprising. During this exciting agency, the alternate action of sandstone and limestone appears worthy of remark; as proving, that amidst her fiercest energies, nature is governed by her own restraining laws of maximum and minimum forces; limestone appearing to have had by far the most vivid action.

The grand chalk deposit connected with the fifth specimen of limestone, seems an important division in our planetary fertilization: it contained fossil shells, corals, turtles, lacertæ, and fishes; and with *it* ends the second class, or the secondary formations.

Immediately above the chalk deposit, *the third class of formation,* or the tertiary formation class, commences: the first stratum whereof comprehends tertiary sandstone, and brown coal formations, with crocodiles, and dicotyledonous plants. The second stratum comprises coarse limestone, or what is understood by London clay, with similar remains. The third successive stratum comprises siliceous limestone gypsum, and contains the first fossils discovered of birds, and mammiferous animals.

The next transition strata carries us into what is termed "the diluvial formation;" and wherein are found fossils of extinct species of elephants, rhinoceroses, hippopotamuses, tapirs, deer, hyenas, bears, &c. In the subsequent next stratum, we come to a fresh geological division, namely, to "post-diluvium deposits;" comprising, according to M. Humboldt, sandstone and sand limestone formation, with buckstone; and wherein fossil remains of the human species are acknowledged to be found. Ancient writers describe them as of enormous stature, and the earliest human achievements in what we now call mechanics, and also in sculpture, corroborate the fact. Since what consolidation of actual human strength could compass the edifices of those ages?—or what present sculptural science could expand the present dimensions of the human frame, into the correct proportions of THEIR STATUES? The actual possession of that strength, and of that bulk, alone could accomplish such monuments of former grandeur.

In the course of the four formation transitions, geologists trace three distinct *Oceanic* submersions*

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* In what is here said, no determinate number of deluges is absurdly intended to be expressed. In the immensity of

—each of them destructive of the animal population of the epoch, and becoming the stratum deposit of their fossil remains.—Geologists likewise trace various intermediate *fresh-water* inundations, attended by minor subversions, and more partial and local concussions. The determination of the above fluvial distinctions forms an interesting part of geological study.

In the animal population extinct from the last general catastrophe, fossils are found of gigantic elephants, rhinoceroses, ruminatory animals, &c. &c., with numerous specimens in affinity with our present horse genus.—Large carnivorous creatures also appear to have desolated this comparatively recent population.—But it is not until deposits of more recent or diluvial concoction come into observation, such as peat bogs, &c. &c., as formed since the commencement of the present or the fourth transition formation, that the bones of any known, or existing animals, are found collected together. A remarkably prolific quadruped,—and possibly of great importance in the *scale of being of its era,*—is particularly to be distinguished in the population extinct by that last and third general catastrophe: namely, a species of

planetary cycles, *these* must have been manifold,—but merely to state, that traces of three distinct *oceanic* submersions upon this globe have *already* been demonstrated by geological inquiry.

Elephant, called Mammoth, frequently 18 feet in height, with a long flowing mane, and immense tusks. This animal appears to have inhabited a large portion of this Globe:—"thousands of its carcasses being left from Spain to the shores of Siberia, and also throughout North America."—"So that," remarks M. Cuvier, "its species was distributed on both sides of the Atlantic, if," continues he, "that Ocean had existence in *its* time in the place which it occupies at present."*

To render this glance at geological progression intelligible, it was necessary to direct attention to *one vertical series of transition strata.* That of M. Cuvier, page 253, in his Essay on the Earth's Theory, as corroborative of one of M. Humboldt's, has been adopted for the purpose. But here, an important geological fact opens to view.

On penetrating even to a considerable depth beneath the lowest, or most level parts of the Earth's surface, the former external crusts are found developing themselves in *horizontal positions*, as the internal strata of this globe, and almost all of them containing innumerable marine productions. The same may be said of the strata composing the lesser hills, the shells whereof sometimes constituting an entire rock, and being found in places where no sea, under any present circumstances, could have carried them. The sea must, therefore, have rested on those places, and its basin have undergone at least one change, either in extent or position. This is evident to the most superficial observation. But on approaching great chains of mountains, traces of former revolutions become still more apparent; the strata, though containing innumerable marine productions, are not so generally horizontal, some of them inclining obliquely, some dipping down several degrees, and, in a few elevated localities, dipping down *vertically*. Similar convulsions are everywhere found surrounding us, whence, at some epochs, entire animal populations have been extinguished; and at others, whole mountains, and even districts of primary rocks have upreared themselves in elementary subversions. Similar convulsions strikingly contrast with the progressive fertilization of the geological economy. Geologists are perplexed by them, it being beyond the power of any *internal* planetary machinery at once to propel and to arrest, such tremendous operations. They candidly acknowledge *that perplexity*. They announce that such organic convulsions cannot *be accounted for by any geological laws*. They are unconscious of their cause. M. Cuvier, with the noble frankness belonging to characters of his stamp, expressly declares, that "the cause of such organic concussions may be, and he trusts will be discovered, but that at present it is *unknown*."

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* Essay on the Theory of the Earth, p. 281.

Here the authoress,—with the sincerest deference to these master minds,—ventures to assume, that the systematic reaction of such convulsions, of such oceanic submersions, and of such fresh-water inundations, form *one* of the *two actuating modes* of planetary renovation,—viz. that of the concussive mode, whereby this planet is maintained in reproductiveness, by alternation in the maximum and minimum impetuses of magnetic polarities, in accordance with the laws of Rotatory Oscillation,—and that the propelling principle of this concussive mode is determined by *the revolutions of the Earth's poles.**

In accordance with this hypothesis, we—as inhabitants of the Earth's planet—find ourselves in the midst of the fourth succession of its land animals. That is, the epoch of Reptiles,—the epoch of Palæotheria, and of Pterodactylus, the epoch of Mammoths, of Mastodons, and of Megatheria—having passed away, the epoch has arrived wherein we—of the human species—aided by our domesticated animals, govern and fertilize unmolested, the Earth's planet.

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* "Nihil est toto quod perstet in orbe."

Pythagorean Philosophy.

Pythagoras supposed the essential condition of the Earth's planet to be, *that of one continual change;* and assigned to the causes in action, of what *he* considered as his own "*modern times,*" a *measure of force* capable of producing, in a sufficient lapse of time, phenomena as important as those of ancient geological data.

Too much praise cannot be afforded the researches of these scientific men for the classification, not merely of stratum sequences, but of the species of fossil deposits analogous to each of them; such classification proving both the affinity of each stratum with its productions, and the magnitude of convulsions through which these strata have passed. Hence fossil races are found embedded in soils and climates, now utterly at variance with their natures, —and specimens of most opposite kinds, and from most opposite regions, conjointly repose together.

As for instance, from the fossil remains in the ferruginous sandstone above our chalk stratum, it is manifest that England and these present portions of the Earth, abounded at one period with crocodiles, tortoises, megalosauri, and with very singular and fearful species of reptiles. And at one epoch, hippopotamuses were common in the countries now forming France, Germany, and England, and very especially in Italy. Those former inhabitants of the part of this planet at present known as a portion of Europe,—*the Megalosauri,* (discovered beyond the limits of the lias concretion, *amidst stupendous ferns,* &c.,) were formidable animals, possessing the sharp-edged and dentated teeth of the monitor lizard. Their size was so enormous, as to be computed at about 70 feet in length. "It was," says Cuvier, "a lizard of the size of a whale."*

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* See Researches, vol. v. p. 343.

Among the facts most impressively demonstrating the diversities in the organic convulsions through which this planet has passed, may be advanced the present singular *association* of *fossil* animals and productions; the species most resembling those living at the present day, "in climates as widely separated as the Cape—the country of the spotted hyena—and Lapland, the country of our present glutton, reposing together; and thus," subjoins Cuvier, "we have seen in a cave in France, a rhinoceros and a rein-deer, by the side of each other."

In support of the hypothesis of the *organic vicissitudes* incidental to these successive epochs, it should be remarked, that no two *electrics* produce electricities of identical nature; and that a body passing from the activity of one species of electricity into that of another, experiences stronger vibrations, than if visited by successive shocks of *parallel strength* from the *same electric.*

And since from similar causes, no two successive antipodes agencies can exhibit magnetism of *identical polarities* (or wherein, we repeat, would consist stellar identity?) it follows, that the passages of the Earth's polar equilibrium, from one antipodes agency into that of the next in its ellipsical sequences, must be attended with more or less of *elementary convulsion,* according to the natures and properties of the successive stars; and therefore, that the above *periodic revulsions* form a distinct, and more stimulant division of planetary renovation. And since it is by the cooperative agency of the Earth's ecliptical and polar revolutions, that the above polar transitions are systematically maintained, it follows, that the combined machineries of the Earth's polar and ecliptical revolutions, exhibit a oneness of design and of execution, stamping that combination with unapproachable perfection.

Hence the following marvel in creative economy may be deduced,—namely, that the stability of the Universe rests on the action and reaction of its integral parts : since in the mechanism of the Earth, we find that it is the spiral course progression of the planet's orbicular circuits, which propels the ellipsical inclinations of its poles; and that it is the progression of the planet's poles, which counterbalances the orbicular oscillations of the planet.*

From the immensity of polar revolutions, no single race can witness, or even preserve the records of more than a fractional part, of any specific polar star agency. The present race of man, therefore, adopts the misguiding phraseology of "*the*" polar star or "*our*" polar star: as if the polar star of *his race's period and hemisphere*, reigned always over the Earth. But the counterbalancing importance of polar action, may be proved by referring to the *comparative ratios* of solar and polar revolutions.

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* From the distinct simplicity of the Earth's motions it is apparent that two separate fluvial revolutions are in constant, though imperceptible progression for her general renovation. The first, being that of the perihelion point which carries the site of the watery masses around herself every 20,937 years ;—the other, comprising the diluvial convulsions wrought throughout her climates and organizations by the systematic, but rare magnetic impetuses of her polar machinery, in perhaps, every 20,937 MILLIONS of years.

In the instance of the Earth's planet, we have seen, that it takes 365 and a fraction, of its *solar days*, or what it calls "*one of its* tropical *years*"—to travel round its sun; while it requires 25,000 and a fraction of those *tropical* years, or 9,131,250 of its solar days, to accomplish one of its polar revolutions of 44½ degrees in magnitude. If analogous computations were permitted on this abstruse subject, the difference in these ratios, in assumed examples of planets as calculated in reference to the Earth, in magnitude,—solar distance,—orbicular rate,—and ellipsical circuit,—would be, as 1 to 25,000:—and a question might thereby arise, somewhat expanding to human conceptions, both as to duration, and immensity:—namely,—what number of *our earthly years* is comprehended *within one polar revolution* of bodies, which require the term of 1,200,—or even of *only* 700, of our years, to travel round *their central Sun?*

Nature, it may be observed, never acts in vain; —is never prodigal of her powers, always accomplishes her aims throughout all component parts, fully and faithfully, by *proportionate* means:—but never attempts *ends*, disproportionate to *means*, or uses *means* disproportionate to *ends*. In a word, Nature never "WASTES" her powers. And lo! what stupendous and cooperative agencies we find upholding the economy of the Earth's organizations. We find first, a machinery within the Earth, for the reception of stellaric remote, but essentially vitalic properties;—and secondly, we find among the stars, a corresponding machinery for imparting those essential properties within the planet. Displaying thereby, if in mutual relationship, an instance of stupendous cooperative design;—but if merely of fortuitous occurrence, encumbering the universal system with an unmeaning complexity, foreign to its innate sublimity.

Is it not more consistent with the systematic grandeur of planetary revolutions, to presume an undulatory scale of organization, in accordance with the advance of our planet's north pole towards, or of its recedence from, the maximum polaric forces in our polar revolutions?

Is not *this systematic undulation*,—this alternation of great with small, and of small with great, consonant to the dictates of reason?—to the principle of Nature's primeval law?—universality of reproductiveness through Rotatory Oscillation?—and finally, do not the geological productions of periods antecedent to known antiquity, do not *they* corroborate the fact?

CHAPTER VIII.

PROBABLE STATE OF MAN'S INDIVIDUALITY—AS A RACE—UNDER VEGA'S NEXT POLARIC DOMINATION.—MIRACLES NOT SIGNS OF POWER, BUT OF WEAKNESS IN DIVINE GOVERNMENT.—SLOW DEVELOPMENT OF MIND IN CREATION'S WORKS.—WHAT ACTUAL PORTION OF THIS PLANET (ACCORDING TO PRESENT LATITUDES AND LONGITUDES) WILL BE THE EMPORIUM OF NORTHERN HEMISPHERIC GRANDEUR, AND CIVILIZATION, UNDER THE NEXT MAXIMUM FORCES OF VEGA.—ANTIPODES STARS NOT DULY ASCERTAINED.—THEIR OPPOSITE AGENCIES AS POLAR STARS.—AURORA BOREALIS AND AUSTRALIS UNDER VEGA'S POLARITY.—UNIVERSALITY OF PLANETARY LAWS.

AMIDST these diversities,—these fluctuations,—attention is naturally directed to the probable advancement of this planet's *percipient Beings* as regards the *human faculties,*—if continued in existence—during the future mighty alternations of Lyriac organizations, with Vega as their crowning star.—And we must assume, that if Man's identity be continued, (of which *no doubt is here entertained,*) his *physical powers* must keep pace with the *current magnificence* of those periods ;—and if his *physical,* necessarily his MORAL powers, or he degenerates into a monster. And since the stamina engrafted by the influence of Ursa Minor could not withstand the stupendous energies of Vega, it follows, that

Man—or what race soever may then represent his supremacy upon this planet, must be gifted with far wider faculties, both moral and physical, than those of the actual human race.

It has become evident, even in this early stage of geological researches, that gleams of *mental perceptibility* were developed very slowly, and obscurely, upon this planet, and THAT within natures of mean, or inert classes;—many revolutionary cycles having been requisite, even for that glimpse of intelligence. It has likewise become evident, that during many successive polaric revolutions, *successive modes of existences became developed;* each more organically complex than preceding ones—and that the first marks of increased intelligence were in modes of being, very repugnant to present human nature,—namely, in *lizard reptiles,* which at one era were the prominent inhabitants of this planet. These reptile quadrupeds first appeared in the voluminous copper stratum, just above the magnesian limestone formation, their numbers sensibly diminishing at the chalk formation,—(that important geological epoch, from the *milder nature* of *its* revolutions) and the race being in fullest development, at the intermediate period;—that is, at the epoch of the Jura and Lias limestone stratum. Nature appears indeed as if sporting in enormities, at this intermediate period; and the fierce energy of its productions, may perhaps indicate the periodic recurrence of *one* of Vega's polaric dominations; since, according to the present hypothesis, the magnetic effluvia of that polar star, govern the Earth's most energetic revolutions.

The fossil remains of this period merit attention not only as objects of curiosity, from diversity of appalling forms and sizes, but for complexity of organization;—such *complexity*, proving the sagacity of the living animals—and consequently, the *growth of mind* since the first *sentient gleams*, in the mollusca and zoophites, of remoter eras: in some lizard species, the articulation of component parts affording the animal, *very nearly*, freedom of choice in movement.—In this brief summary, a single instance of this complex articulation must suffice, as taken from a class of flying lizards called Pterodactylis Longirostris, whose fossils are found near Ankstadt in Germany.

This class of reptiles is of various sizes,—with a very short tail for freedom of running, very long neck, and a very long muzzle armed with sharp teeth, together with very long legs. But the great peculiarity in this species, consists in one of the toes of each anterior leg being *excessively elongated*, so as to be able to attach itself to a membrane adapted for the *support of the animal in the air*, when choosing to fly. Here we find an animal selecting its mode of movement to meet its convenience, and accomplishing that mode by mechanical means, in affinity with the functions of the *human hand!!* What a stride in mental development is IMPLIED by the construction of these formidable reptiles!—nature, while apparently sporting in enormities, still carrying on her plan of increased vitalic energy with increased organic complexity. Nor do we shrink from asserting, that through the manifold ages wherein, to limited observation, this planet may seem as delivered up to malignant and destructive existences, which, as such, are disgusting to contemplate—that throughout these multiple ages—every distinct species of these *seemingly* noxious creatures, was created PERFECT IN ITS KIND:—that is, in its actuating capacities (commonly called instincts)—in its symmetrical proportions,—in its relative antipathies, and kindred affections;—and further,—and what chiefly concerns our subject,—that the fierceness of such conflicting natures was, at this early stage, better adapted to mental development, than harmonious classifications;—such discordancies exciting cogitative perceptions, and thereby furthering that first of all nature's purposes, the growth of mind.

After the formation of the chalk stratum, nature's energies appear taking a milder direction. With occasional fluctuations,—concentrated fierceness, seems changed into progressive fertilization. The three following strata present, in succession, plants of more complex textures,—beds of brown coal,—classes of birds, with mammiferous animals;—while in the succeeding stratum,—or *that* intervening between the diluvial and post-diluvial formations,—gigantic creatures are found, of sagacity little inferior to human, to have adorned nearly every region of the Earth:—until at length,—Man,—in the plenitude of his primeval might,—arose to assert *his supremacy*, with a gigantic magnificence, which would be incredible to present circumscribed conception, but for the monuments of its greatness.

This is not intended as a metaphysical disquisition; but, comprising as it does, an elementary treatise on the indissoluble union between Astronomy and Geology, it must here be stated, that the introduction of miracles within any system, cannot constitute the criterion of Omniscient power. *That criterion* must consist in the *invariability of the system;*—in its *oneness of design*, and oneness of development;—in the foreknowing, and providing for, the exigencies of that system, throughout all time, modes, and place;—and *that*, with a comprehensiveness of purpose, including alike the functions of infinitesimals—and the vicissitudes of eternity.

Now, it is evident, that the production of MIND, must have had a *commencement*—and that commencement, must either have had a miraculous impetus, or have been consequent on *antecedently* *developing* causes. The supposition of miracles as actuating mediums, we find derogatory to the majesty of Omniscience. Miracles form an interruption to, not manifestation of, perfectibility of agency.—Miracles are necessary only for the sudden removal of some defect, or the introduction of some good,—heretofore unanticipated.

In the administration of Omniscience, there may be *casual evils,* but there can be no defects: those casual evils, like occasional discords in rich music, only presenting themselves to be resolved into still loftier harmony.—And to Creative Prescience, *every thing* must be *foreknown.* The *origin* of *Mind* could not have been miraculous. From the complexity of its nature, it must have formed the work of greatest elaboration, in creative economy.

Its formation must have been *anticipated,*—*provided* for; and the first germ of its perceptibility, must have been preceded by a series of developing causes, as multiform as minute. Nay, such is the importance of *Mind,* in the *scale of creation,* that, for ITS PRODUCTION and *subsequent* SUBLIMATION, this magnificent apparatus,—the Universe,—may originally have been designed.

From the absence of human fossils in the scanty superficies hitherto perforated within the Earth's crusts, it should seem, that amidst the organic magnificence of former existences, the elements essential to the composition of the present being called *Man*, had not, antecedently, congregated;—at least not under their present form. Man, as he is now externally constituted, did not BEFORE exist. But from the *minuteness* of nature's progressions, his *embryo faculties* might already have been called into action, under different modifications. It seems reasonable to presume that they had: because as that complex compound of heterogeneousness, called man, appears to be the most elaborate production that has hitherto been placed upon this planet, it must have required great *diversity of processes*, to have amalgamated that complexity, even into its present inharmonious incongruity. Nature never retrogrades—is always progressive in her works.—Having minutely accomplished an aggregation of similar elaboration—she will not abandon it;—she will continue the existence of its *identity*, but under, probably, much improved conformation.

In 12,500 years hence—Vega will again be in full magnetic sway over this planet. At that period the combined agencies of the perihelion and polar revolutions, will have placed the portion of this globe comprised between the present 17th degree of our north latitude, and the 26th degree of our present south latitude, beneath THIS the northern celestial hemisphere of the Earth: crowning those actual comparatively watery wastes, with the continents and insular surfaces, which, from the Earth's mechanism, are indigenous to her northern hemisphere.*

At that epoch, from the united agencies of these mighty revolutions, with Vega in polaric *paramountship,* those now little known regions will display specimens of organic magnificence and intellectual expansion beyond present contracted views. The individuality of the human species—whatsoever may be its organic modification—exhibiting itself therein in fulness of moral and physical supremacy: that is, girt with corporal powers, tremendous to the contemplation of man's present feebleness, and endowed with faculties unapproachable by his present conceptions.

The assertors of "human dignity" may rest assured of the continued existence of *man's identity,* though probably *not* under that identity's present conformation. Does not nature preserve the polarities of each atom throughout its changes?—and shall she guard with less scrupulosity the identities of her most elaborate work—MENTAL

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* To us "BRITISHERS" (as our brethren of that locality of the Earth, at present called *America,* please to denominate us) it may not be uninteresting to remark, that the spot on this globe comprehending the site of our "national pride"—London—will lie at that epoch in about the fourth degree of our actual northern latitude. It will have then also progressed *longitudinally,* through the first two thousand years in point of time, and the first 35 degrees in point of space, in the Earth's NEXT ecliptical revolution of 20,937 years.

RACE INDIVIDUALITY—throughout ITS progressive fluctuations? Shall each express particle expand and expand into still purer and purer essentiality,—and shall not MIND—ONCE FORMED—sublimate throughout eternity?

To elucidate the connexion between Astronomy and Geology, in determining the planetary organizations of definite epochs, attention should be directed to the sequences of stars comprised within the north and south polar ellipses of our planet; that is, to the classification of the antipodes stars between Vega and Ursa in the northern polar ellipses, with those between Canis Major, and a star in the constellation Octans in the Earth's south polar ellipses. From want of classification among antipodes stars, many persons inadvertently presume the antipodes star of our actual north polar star to lie in the constellation of the Cross; whereas the antipodes star of Ursa Minor, or the Earth's actual *south* polar star, is a small star in the constellation of Octans. The antipodes stars of the superb southern Cross, lie within our northern constellation of Cassiopeia. As the magnitude of the present south polar star, Octans, is registered on ordinary globes, its inferiority to the polar star of *Vega's epoch*—Canis Major—corresponds with the relative inferiority of Ursa Minor, as compared with Vega: a correspondence consonant with the general analogy of nature's works:—the north polar star of a planet, constituting the medium of direct or positive magnetic transfusion throughout the planet, and its south polar star, the planet's medium of negative magnetic polarity.

The opposite natures of these Stellaric agencies are apparent in the opposing phenomena of the Earth's polar regions. In the arctic regions, nature exhibits the energy of *positive* magnetic transfusion in manifold vitalic exuberances; and in the antarctic regions, immeasurable masses of waters display unfathomable emporiums of future reproductiveness,* although scantily furnished with existing animation. The recent voyages of our naval investigators testify the truth of this theory in the dearth witnessed of organic vitalities within the antarctic regions, and in the vivid exuberance, everywhere teeming with life and enjoyment, descried within the north polar regions.

Among the above polaric exuberances, the splendid Auroræ Boreales display themselves: those brilliant corruscations, wherein the electric effluvia of our Sun, on penetrating the arctic regions, *become intertwined amidst the magnetic streams of the Earth's* north polar star in their direct transit towards the focus of magnetic recipiency, viz. *the north pole of the Earth.* In such collisions, the properties of those mighty agents,—*Electricity and Magnetism,*—mutually enkindling each other, produce illuminations constant in recurrence, and which, during absence of solar light, are *visible:* evidencing, amidst the dreariness of polar winters, a *provisional* care, which not merely alleviates positive evil, but in the mode of that alleviation, exhibits phenomena of beauty and grandeur, calculated to impress the faculties of these remote races with majestic conceptions of creative sublimity.

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* See page 68.

The difference between the illuminations of the Aurora Borealis and Aurora Australis partake of their actuating phenomena. In the Aurora Borealis, we have exhibitions of *direct* or *positive* magnetism in collision with elective impetuses, *rich in the glowing* splendour of every diversified hue. In the Aurora Australis we have, on the contrary, effluvia of negative polaric magnetism, exhibiting long silvery columns, so beautifully clear, as occasionally to admit of stars being seen through them, BUT ALWAYS MAINTAINING THE PURITY OF MAGNETIC WHITENESS.

But we must remark, that we are here contemplating the Aurora Borealis and Australis of the *present era:*—that is, Auroræ, during the polaric supremacies of Ursa, and of the star in the constellation Octans. WHAT must they be, under those of Vega and Canis Major? That is, when Vega's magnetic torrents MEET the electric effluvia of those all-expanding periods! The very heavens must seem liquid flame! exhibiting spectacles which, although incidental to the ordinary phenomena, and merely proportioned to the *physical impressions*, of Earthites of *Lyric epochs*, would DISMEMBER THE ORGANIZATIONS, AND ANNIHILATE THE RACES OF EXISTING SCALES. The organic and physical functions appertaining to Ursa Minor epochs—we repeat it—would SUCCUMB beneath the impetuses of Vega's forces:—while, without the alternations of Vega's impetuses, the planetary activity of Ursa Minor's influence would degenerate into feebleness. It is by the rotatory oscillation of alternate maximum and minimum polaric impetuses, that the Earth's planet is upheld in continuous vitalic fecundity:—and not merely the Earth's planet, but each of our other solar planets. —Because all planets being governed by the *same laws*,—(differently modified to meet their distinct natures),—the diversities of polaric effluxes necessary to the Earth's vitality, are equally essential to the other solar planets;—and are analogously imbibed and interchanged throughout them all.—And since planetary laws are not confined to any single system, it likewise follows, that similar effluxial and polaric agencies pervade the planetary systems surrounding each of the stars comprised within the Earth's two polar ellipses. Nay further, that the poles of every planet throughout all the countless solar systems surrounding us, equally imbibe, and equally transfuse within *their* definite planet, magnetic effluxes from the succession of antipodes stars comprising each planet's north and south polar ellipses, and around which definite ellipses, the determinate obliquity of each particular planet directs the inclinations of *its* poles in their polar revolutions.

With what an accumulation of vitality must every solar system be replete, from similar diversified currents! their *reactions* (comprehending the decompositions, recompositions, and interchanges of each multitudinous property,) invigorating the agency of each particular sun upon his vassal planets,—and, in a minor degree, even renovating the *interchanges* of originative agencies as carried on among the stars;—interchanges, however primevally vitalic, yet which, if solely operative,—that is, unsupported by the reaction of polaric and cometary currents,—might not suffice throughout infinitude, either as to duration, or space.

CHAPTER IX.

THE COOPERATIVE AGENCY OF THE HEAVENLY HOSTS: ITS UNITY OF DESIGN.—IN WHAT MANNER THAT UNITY OF DESIGN IS ELUCIDATED BY TECHNICAL PHRASEOLOGY.—ELEGANTLY FITTED UP LITTLE ORRERIES.—THE ORRERY OF THE HEAVENS.—EVERY STAR IN THREE-FOLD COOPERATIVE AGENCY.—THE CHAINS OF INTERSECTIONAL COOPERATION UNINTERRUPTED THROUGHOUT THE UNIVERSE.—CONFLUENT STARS; THEIR CHEMICAL PROCESSES.—EVERY STAR A CONFLUENT STAR.—THE CEASELESSNESS OF STELLAR VITALITY.—THE MYSTIFICATION OF TECHNICALITIES INVOLVING THE PRACTICAL LAWS OF ASTRONOMY IN CONFUSION.

WE are here entering on the grandest of all cooperative agencies,—namely, the magnetic or vitalic interchanges maintained throughout the starry host. But our labour will be abridged by finding in these interchanges, the same unity of design for the same unity of purpose actuating these superlative cooperatives, which govern interchanges among atoms: —viz. universality of elementary interchanges for universality of reproductiveness.

Before commencing this subject, let us see how the mystification of *technicalities* illustrates this *unity of purpose.* Reply. By subtracting in all *explanations* (! ! !) one of the above celestial cooperatives—OUR SUN—from this universal cooperation —wholly divesting that cooperative of his connective, or stellaric functions,—and thus placing our sun in insular pomp—apart—in a nook, as it were, of creation—wherein, unsupported and unsupporting, our beauteous sun remains an idle spectator of surrounding magnificence, not one of its glorious upholders.

Such, in very fact, is the mutilation* of our Sun's agency, as at present expounded by technical phraseology, and exemplified by accompanying elegantly fitted-up little Orreries. Appropriate toys for such bewildering incongruities;—wherein common sense is set at defiance, and the comparatively formidable size of our planet, the Earth, menaces damage to the common,—but, as therein represented, *insignificant* centre of our system,—the Sun,—should that apparently inadequate functionary prove remiss, whether as to light or heat, towards the Earth's unwieldy self, with her cumbrous moon. And a hard task, and a comfortless, it must be confessed, has the Sun in some of these orreries, with his best endeavours, to *light up and warm* bodies so much bigger than himself, as most of the planets are represented in these fantastical specimens of tasteful puerility,—our very moon out-topping solar majesty in expansion of bulk!

The only orrery really explanatory of the Heavenly

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* It has been calculated that the sun would much more than fill the orbit of the moon, seeing that the diameter of the sun is 763,000 miles, whilst the diameter of the moon's orbit is only 480,000 miles.

Host, is *that* of the Heavenly Vault. Therein, collective majesty shines in one resplendent maze,—and individual courses expand in the fulness of august simplicity.

Every star possesses three-fold agencies. That is, every star exercises the functions, first, of solar or electric invigorator within a definite system of planetary bodies in immediate circulation around himself, as their common centre, or sun ;—secondly, those of stellar, or cooperative diffuser of vitalic essences *throughout space*, by magnetic interchanges with his compeers—the other stars ;—and thirdly, those of magnetic transfuser throughout certain planetary bodies dependent on his polarities for their organic renovations.

Every star, therefore, cooperates in upholding the glories of infinitude, and thereby virtually maintains his own ;—and this cooperation is established by, in fact, the *five* distinct agencies of each star.—First, as the north polar star of one planet; —secondly, as the south polar star of another ;—thirdly, as the primary star (or sun) of his own immediately circulating system of planets, satellites, comets, &c. &c. ;—fourthly, as the confluent star, or the *concentrative agent* among his antipodes, and immediately surrounding stars of *their elementary interchanges ;*—and fifthly, by his general magnetic circulations with all other stars, as shall be attempted to be explained.

In the scheme of creation, there is neither chasm nor insulation. The vitality of each integral portion is maintained by its intersectional interchanges with the integral portions immediately surrounding it; and these intersectional interchanges, being carried on *in like manner by every distinct integral portion,* diffuse one simultaneous divergence of elementary vitality, throughout infinitude: the stability of the Universe resting on this principle.

Hence, however stupendous are their individual orbs, and however immense their relative remoteness, yet each particular star is within action of magnetic interchanges with all his immediately surrounding and antipodes stars; from each whereof, he derives elementary and magnetic properties appertaining to their respective natures, and which properties he *returns* towards each, in the same quantities, *but possessing diversified qualities.*

To render this universal circulation somewhat familiar to our apprehension, we must bear in mind that *reciprocity* in elementary interchanges, as carried on by elective polarity, forms the groundwork of all ellipsical or spiral course action; and that it is maintained by interchanges among stars as determinately, as among other classes of bodies. Each particular star, therefore, is *the confluent star* of his own immediately surrounding and antipodes stars, attracting, by the polaric affinities of his own specific properties, portions of various magnetic and elementary properties from each of them; and which distinct portions, having conjointly circulated around himself, are reciprocated towards the above surrounding stars in similar affluxial quantities, but possessed of dissimilar qualities. This dissimilarity in the returned effluxes is consequent on the above conjoint passage around the confluent star, and constitutes the *grand renovatory principle* of all elementary interchanges. This is self-evident, because each affluxial current brings properties merely from *one* express star;—while these distinct properties, on reaching the confluent star, come within reciprocal elective polarity, and mutually decompose one another,—assuming, during their conjoint passage around this, their common central, or confluent star, endless diversities of *fresh polaric combinations.* The affluxes propelled from the confluent star therefore bear away, *in exchange,* portions of the surrounding and antipodes astral emanations, intermingled with a portion of the inherent properties of the confluent star, as abstracted during the conjoint passage around himself. And hence each affluxial current widely differs after its conjoint passage, both in magnetic qualities, and in modification of them, from every previous and every subsequent emanation, in manifest furtherance of elemental diversity.

These conjoint passages exhibit, in fact, *chemical processes* on the grandest scale, in development of infinite reproductiveness through universality of polaric action; since it is evident that, during each conjoint passage, the confluent star derives invigoration from the effluxes of all his widely remote, but intersectionally operative stars; while only a comparative modicum is abstracted from himself.

Having thus attempted an explanation of the nature and action of a confluent star, how *next* are we to proceed? How carry our *reader's thoughts* within the magnificence of space, circumscribed as are *our own views,* and encumbered, as are *these,* by the *lumber of human* language! In the fewest possible of those lumbering mediums—WORDS—let us therefore beg the reader to remember, that EVERY STAR is a CONFLUENT STAR:—and thence, that these conjoint passages are in constant polaric activity around *all stars;* each star, throughout infinitude, being thereby upheld in ceaseless invigoration! Hence the imperishable exuberance of Stellar vitality.

When we reflect on the properties comprised within an atom, we are filled with wonder at the accumulation! But when we *try*—for we can *never do more*—to contemplate the elementary diversities conglomerated around each particular star during these conjoint and *incessant* confluent passages, human faculties stagger beneath a complexity so astounding — a complexity among the primary wonders of creation, from the chaos of heterogeneous properties, at first amalgamated (as it were) by the activity of elective polarity, and thence methodized by the spiral course agency of rotatory oscillation, into incalculable channels of universal reproductiveness.

Here we must pause, again to regret the difficulty attending actual astronomical inquiries from the confusion created by *soi-disant* "scientific phraseology"—as regards the primary object of our attention as *Earthites*—OUR OWN SPLENDID SUN.—A confusion subversive of nature's grand principle —"Unity of Design"—and not merely abstracting his mighty cooperative agency as *one among the stellaric functionaries upholding universal reproductiveness,*—but likewise, neutralizing his very nature; —and by rendering that nature dissimilar to that of any other organized body, involving our Sun in an obscurity, *impervious* to inquiry. We therefore know less—*astronomically,*—about our Sun, than we do of any other celestial body.

For instance.—The longitude and latitude of other celestial bodies are determined in relation to one or the other of the Earth's hemispheres; yet no definite idea is entertained of our *Sun's position in space*—some placing him near the division in the Milky Way—some conjecturing his vicinity to Sirius —many wondering at his "keeping alive" so long, and looking "generally so bright"—though occasional alarms supervene, at presumable indications of "going out,"—from casual disfigurements of "black spots."

Let his STELLARIC FUNCTIONS be restored to our Sun, by the phraseology of *common sense,*—and science will speedily determine both his cooperative agency, and his stellaric locality.

As every star possesses his specific antipodes, or his zenith and nadir stars, we may assume, that when the constellation containing the nadir antipodes,—or the southern antipodes star of our Sun,—is ascertained, it will be found that the constellation spherically opposed *to that nadir* constellation is the constellation comprehending our Sun.

As affinity of nature begins to be suspected between our Sun and the other stars, it may be advisable to observe in the present state of mystification, that the term "native light" has a different acceptation from the terms "self-sustained or self-dependent" light. Stars certainly shine by their "*native light,*" because the rays of stars are not reflected upon them from other bodies, but are the product of their own elective polarities, in internal chemical action: but we must recollect that these polarities are in action upon *externally* derived sources:—which sources withheld, those chemical operations would terminate, and the stars would cease to shine. Consequently the light and rays of the stars, instance the grandest possible chemical processes, carried on by the grandest possible apparatuses, the starry host, and upon the grandest possible scale,—that of infinitude:—but they merely exhibit native,—not indigenous illuminations.

On the other hand, the terms "self-sustained, or self-dependent," with which the preceding terms frequently appear confounded,—have reference exclusively to DEITY—being indicative of its attributes.

Were the light or rays of stars "self-dependent, or self-sustained," *every star would* be omnipotent; —there being no medium between *creative self-efficiency*, and agencies operating from externally derived sources.

Thus, in conformity with the unity of design everywhere in operation, every star, like every planet, derives elementary properties from extraneous sources, and, in return, diffuses fresh modifications of them towards other bodies. The operations both of the star and planet are grounded on the same principle,—namely, universality of elementary interchanges for universality of reproductiveness; but their respective natures being dissimilar, it is necessary for the accomplishment of *analogous benefits*, that their *operations* should be correspondingly *modified*. This modification is worthy attention, as another instance of unity in the Divine scheme.

Stars belong to a class whose relative positions *vary inconsiderably*, and, consequently, all emanations from stars are *continuous*, or, in unceasing effluxes. Planets, on the contrary, are erratic, and the relative positions and distances of their courses are constantly varying. Elementary interchanges among planets are, therefore, not continuous, but *periodic*, and are stimulated in two modes:—

1st. When the course round the Sun of one planet, progresses, for *a definite period*, along any one of *certain positions* towards the course of *any other* planet, in *its* circuit round the Sun. During such relative positions, important elementary interchanges are maintained between the circulating planets. This mode of elementary interchange is called *Relative Course Action.** It possesses a lengthened and determined agency (as has been proved, by the long heat and drought of 1844), and may be deemed analogous, *in action*, to the continuous agency of intersectional polar stars, upon their dependent planet.

The 2d mode of planetary interchanges is, when any three celestial bodies come simultaneously within certain relative positions. This second mode of interchanges is called *that* of "*Aspects.*" It is much briefer than the first, but is very important, and frequently is extremely powerful; being analogous (though on a very diminutive scale) in operation, to the elementary concussions consequent on the transition of the Earth's poles, from one conjoint polar action, towards the next in sequence: the quantum of aspectal incidences like those of polar star transitions, depending on the proportional dissonance of natures, in the operative bodies. The functions of a planet towards its satellites, corresponding with those of a Sun in relation to his revolving planets, the interchanges of planets with their satellites, are continuous.

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* See Physical Astronomy, by Frances Barbara Burton, page ix.

CHAPTER X.

THE AGENCY OF ELECTIVE POLARITY IN OUR SOLAR SYSTEM.—DIFFICULTY OF TRANSFUSING LIGHT, HEAT, AND MOTION, FROM A CENTRAL POINT TOWARDS BODIES CIRCULATING AT DIFFERENT DISTANCES AROUND THAT CENTRE.—HOW THAT DIFFICULTY IS OVERCOME IN THE MECHANISM OF OUR SOLAR SYSTEM.—TABLE OF RATIOS, OBLIQUITIES, ETC. ETC. OF OUR SOLAR PLANETS.—OBSERVATIONS THEREON.—EXTERNAL COMPENSATORY AGENCIES ON INCREASED SOLAR DISTANCES.

In further elucidation of the agency of Elective Polarity, we shall direct attention to *the general mechanism of our solar system* in reference to the scales of polar obliquity and solar distances necessary to the diffusion of light, heat, and motion among our solar planets.

From the intenseness of solar light and heat, and the central point of their diffusion by the sun throughout our system, it is evident that planets which revolve in comparative vicinity towards him, require *shrouding* from solar action for their conservation; while planets compassing remote revolutions around him, require proportional *condensation* of solar ray invigoration.

A scheme obtaining the above gradation of *planetary illumination and temperature,* not merely within a single solar system, but throughout the whole infinitude of solar systems, may be pronounced *grounded on provisional care!* Such is the *scheme* under present consideration.

To apprehend the precision wherewith a scheme of such immensity is maintained, we must remember the five following facts.

1.—That the more *vertical* are the poles of a planet revolving round its sun, or central star, the more obliquely the sun's rays strike upon the planet.

[Consequently, the *narrower* is the portion of the planet exposed to direct solar influence. In other words, the less intense is the action of the sun upon the planet.]

2.—The more *oblique* is the inclination of the planet's poles revolving round its sun, or central star, the more *direct* is the action of the sun's rays upon the planet.

[Consequently, the wider is the surface of the planet in direct recipiency of solar rays. In other words, the stronger is the sun's action upon the planet.]

3.—The *nearer* lies the course of a planet round its sun, or central star, the more rapid is the planet's motion around him.

[Consequently, the less pervious is the planet to the impression of solar rays.]

4.—The *remoter* lies the course of a planet round its sun, or central star, the more rapid is its rotatory revolution.

[Consequently, the smaller the intervals between solar action upon every portion of the planet's surface.]

5.—The *remoter* lies the course of a planet round its sun, or central star, the more *porous* is the nature of the planet.

[Consequently, the more *prone* is the planet for solar ray recipiency.]

Accordingly we find, in our solar system, that the closer a planet's revolutions lie round our sun, the more vertical are its poles,—the more rapid its orbicular motion,—and the narrower its torrid zone. While, on the other hand, the remoter lies a planet's revolution around our sun, the more *porous* is the planet's nature. And we find a graduated scale obtaining throughout our system, of the above combined increases of polar obliquity, organic porosity, and rotatory rapidity, with decrease of orbicular motion on increase of solar distances, to be established from the nearly vertical polar altitude, in which the ponderous planet Mercury travels round the Sun at the rate of 30 miles a second, down to the porous planet Saturn, progressing, as *he* does, at the rate of only 6 miles a second, with his 87° 3′ of polar obliquity. The medium obliquity and rate of motion of the Earth's planet, we find to be in affinity with the medium position of our planet within our solar system.

The following table of compensatory ratios on increase of solar distances, may place these, their relative actions, before the reader at once.

Minutes of the compensatory ratios in polar obliquities, orbicu quent on increase of solar distances, as

MERCURY travels 30 miles every second; his rotatory period is 24^h^ 5′; his polar inclination comprises 7 degrees; his diameter 3,108 miles; and his direct solar distance 37,143,000 miles. His equinoxes take place every 44 of our days; their crossing points are Taurus and Scorpio; their retrogradation scale is 1° 12′ 10″ every 100 of our years. His density, as compared with the Earth's, is as 2.77 to 1.

VENUS travels 23 miles every second; her rotatory period is 23^h^ 21′ 19″; her polar inclination comprises 15 degrees; her diameter 7,498 miles, and her direct solar distance 68,791,752 miles. Her north pole points towards the 20th degree of Aquarius; her south towards the 20th degree of Leo. Her equinoxes take place every 112 and a fraction of our days; their retrogradation scale is 51′ 40″ every 100 of our years. Her density, as compared with the Earth, is as 1.04 to 1.

THE EARTH travels 19 miles every second; her rotatory period is 24 hours; her polar inclination comprises 23° 28′; her diameter 7,964 miles; and her direct solar distance 95,000,000 miles. Her north pole points towards the 1¾ degree of Ursa Minor, and her south pole towards 1¾ degree in Octans. Her equinoxes take place every six of her months: that is, during her vernal and autumnal progress along Aries and Libra; their retrogradation scale is 83′ 30″ in every 100 of her years. Her comparative density with those of the other planets, is in compensatory ratio with the solar distances of each particular planet. Her medium planetary density coincides with her medium station among the solar planets.

MARS travels 15 miles every second; his rotatory period is 24^h^ 31′ 28″; his polar inclination comprises 29° 30′; his diameter 4,218 miles, and his direct solar distance 144,907,630 miles. His equinoxes take

and rotatory motions, and organic porosities and densities conse-
governing the courses of our seven solar planets.

place every 11 months and a fraction of our years; their crossing points are in Taurus and Scorpio; their retrogradation scale is 46′ 40″ every 100 of our years. His density, as compared with the Earth's, is as 0.93 to 1.

JUPITER travels 8 miles every second; and although 1,470 times larger than the Earth, his rotatory period is only 9 hours 56 minutes and a fraction. His polar inclination comprises 86° 55′; his diameter 89,069 miles, and his solar distance 494,499,108 miles. His equinoxes take place every 5 years 6 months 157 days and a fraction of our time; their crossing points are in Cancer and Capricornus; their retrogradation scale is 59′ 30″ every 100 of our years. His density, as compared with the Earth's, is as 0.25 to 1. Jupiter has four moons revolving around him.

SATURN travels 6 miles every second; his rotatory period is 10 hours 30 minutes and a fraction; his polar inclination comprises 87° 3′; his diameter 78,730 miles, and his solar distance 907,089,032 miles, His equinoxes take place every 14 years 6 months 87 days and a fraction of our time; their crossing points are in Cancer and Capricornus; their retrogradation scale is 55′ 3″ every 100 of our years. His density, as compared with the Earth's, is as 0.13 to 1. Saturn is 900 times larger than the Earth; he has 7 moons, and a double ring circulating around him.

HERSCHEL travels 4 miles every second; his rotatory period is unknown. His polar inclination comprises 89° and a fraction; his magnitude is eighty times greater than the Earth's, and his solar distance comprehends 1,840 millions of miles. His equinoxes take place about every 42 of our years; their crossing points are not yet determined. Only 6 moons and 1 ring have hitherto been discovered circulating around him. He was discovered the 13th of March, 1781.

OBSERVATIONS ON THE FOREGOING COMPENSATORY RATIOS.

1.—Though Venus's *period* of rotation is briefer than Mercury's by 16′ 16″: yet, since Venus's diameter is larger than Mercury's by 4,390 miles, *her rotatory velocity* exceeds *that* of Mercury.

2.—Though the Earth's period of rotation is briefer than Mars' by 1′ 28″, yet since the Earth is unencumbered by great atmospheric density, while Mars carries around him an *atmosphere* of altitude so immense as to obscure from our sight any star he passes over, for the distance of two of his diameters *from that star*,—it follows, from the *additional circumference* given to Mars by this machinery, that his *rotatory circumference* is greater than the *Earth's;* and, consequently, that the rotatory velocity of Mars, exceeds that of the Earth.*

3.—In like manner, though Jupiter's period of rotation is briefer than Saturn's by 30′, yet, since the diameter of Jupiter only comprises 89,069 miles; and the diameter of Saturn's *external ring* comprehends 204,883 miles; the *rotatory bulk* of

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* On the 18th of February, 1837, the Moon, during her passage across Mars, becoming a focus to his rays, demonstrated the grandeur of Mars' atmosphere, in an arch of variegated radiance, stretching nearly from one horizon to another. (*Astronomy Familiarized*, by F. B. Burton, p. 40.)

Saturn, consequent on his annular machinery, exceeds that of Jupiter by 115,814 miles; and, therefore, Saturn's *rotatory velocity surpasses*—fractionally—that of Jupiter.

OBSERVATIONS ON THE ADDITIONAL COMPENSATORY AGENCIES AFFORDED PLANETS, ON GREAT INCREASE OF SOLAR DISTANCE, BY EXTRANEOUS MACHINERIES.

From their solar proximity, neither Mercury nor Venus require more solar emanations than those in immediate transit from the Sun.

The first planet therefore demanding *provisional* agency *on increase of solar distance* is *the Earth,*—the third from the Sun; and accordingly, that wonderful adjunct to planetary vitality—*our Moon*—circulates around the Earth.

Mars, from further remoteness, requires further extraneous, or counterbalancing agency; and it might perhaps be expected, that *two satellites* should revolve around him; but, from the singularity of Mars' nature, *extraneous* compensation cannot be afforded him. Mars cannot enjoy lunar agency.

The important functions of Mars as the electric planet of our system, render some inquiry into his nature expedient. Its singularity consists, in Mars being at once the most impetuously influential, and, next to Mercury, the smallest planet in our system, as shown by the foregoing table.

Mars' globular diameter only exceeds Mercury's by 1,108 miles; and the intense angular acuteness of his polarities, induces an activity in *his* elementary interchanges tremendously energetic, and *prone to exhibition*. Mars, therefore, as the cooperative diffuser of electricity within our system, and placed as he is for that purpose, towards its *midmost portion*, requires an organization *peculiar to himself*, both as relates to protection for the other planets against his fiery nature, and as ensuring *stedfastness* in Mars' own solar revolutions.

The protection necessary for the other planets, is afforded by the comparative smallness of Mars' *globe*. If Mars were a large planet, his elementary *interchanges* might amount to planetary *concussions*. From the additional impetus given by additional *globular weight*, the action and reaction of a planet of Mars' high-wrought polarities, might scatter devastation, instead of renovation, among the other planets. On the other hand, from proneness to extraneous influences, Mars' *globular smallness* requires *protection from the other planets*.

Bodies so much bigger than himself, as are three among the other planets, might otherwise disturb Mars in his orbit by their superior attraction. Now this required protection is afforded Mars by the astonishing magnitude of his atmosphere. Encased within it, the smallness of his *globular* bulk is counterbalanced by his effluxial *machinery:* a machinery consequent on intensity of polaric action throughout Mars, as the *practical electrician* of our system, and whence effluxial circulations are propelled around him, which augment his *rotatory* circumference into a magnitude efficient to preserve stedfastness in his own orbicular courses, while they are devoid of the *ponderosity* inevitable on increased *globular bulk.*

As a protective medium for this small, but tremendously energetic planet against the larger planets, on the one hand, and on the other, as an equally protective medium for those other planets against the fiery Mars himself, this singular atmosphere is an instance of elaborate provisional mechanism; and before entering upon its optical powers, we shall inquire wherein originates *impracticability for lunar action*, upon a planet of Mars' nature?

At Mars' solar remoteness, a moon, to be *operative*, must possess considerable proportional magnitude; and a moon, of magnitude efficient for the above required *solar ray recipiency*, would be beyond the control of a globe of Mars' *comparative smallness*;—great superiority of bulk in primary planets being necessary for their control over bodies circulating around them. For example, the Earth's diameter of 7,969 miles surpasses that of Mars by 3,746 miles; and the diameter of our moon is only *one-fiftieth part* that of the Earth's, while the Earth's solar distance is only 95,000,000 miles. Herein, the equipoise between relative magnitudes and distances is so nicely preserved, that the bulk of our moon is efficient for adequate solar ray recipiency, and yet is sufficiently small in itself to be under the control of its primary, the Earth. But remove our Moon 49,907,650 miles further from the Sun, to revolve round a body little more than half the Earth's size, and where would be the Moon's efficiency? and what would become of those harmonious equipoises? At that distance, a moon smaller than ours would be inadequate for solar ray recipiency; and yet, from Mars' globular smallness, our Moon would possess nearly twice the relative magnitude *towards Mars*, that she does towards *the Earth*: consequently, even if she could exhibit her actual solar illumination towards Mars, (which, at that increased solar distance, could not be compassed by a satellite of her comparative smallness,) yet, small as is the size of our Moon, compared with that of more distant ones, she could not act upon Mars: their relative bulks precluding her circulation around him.

The geometrical precision found in the relative magnitudes and distances—(consequently, *mutual reactions*)—of the celestial bodies, forms a subject matter of primary algebraical importance to astronomical inquirers.

Notwithstanding, therefore, the surprise often expressed, that Mars has not, "*like ourselves, a moon,*" it is evident, that moons—of any size or number—are inadmissible as extraneous renovations for Mars. If operatively attempted, Mars and his moons would be *mutual destructionists;*—and the grander the moons, the more awful the catastrophe. And yet that important functionary, Mars, demands, from his remoteness, an *extraneous compensatory agency.* Nature, therefore, has gone quite out of her ordinary course in affording it him; and, taking advantage of the superlative gaseousness of his nature, has abandoned the renovatory medium of circulating bodies, to enshrine Mars in a machinery, the practical advantages whereof to his inhabitants, and to the whole solar system, cannot be sufficiently admired.

This machinery displays Mars as encompassed within *one enormous spherical lens.* And a "spherical lens," as M. Arago beautifully defines it, "is nothing else than a combination of PRISMS executed with accuracy."

Behold, therefore, one MIGHTY *continuous* LENS in Mars' surrounding atmosphere; the circumference at the base whereof, is 12,654 miles, and diverges, in altitude, thousands of miles around him! What an instance of compensatory agency is displayed in such an apparatus, encircling this important planet, as it does, with a protective medium, both for himself and for others, *matchless* *in counterbalancing precision,*—and, at the same time, enshrining him within one mighty condensation of light and heat! Beheld, through *its refractions*, the inhabitants of Mars must hail the appearance of the Sun, before their horizon has approached his visible angle, and after it has passed downwards from it, and *that* with an apparent augmentation of globular magnitude.

After passing Mars, we find, in this our practical planetary survey, a wide interval between our solar planets; but an interval only adequate to the expansiveness of the compensatory scheme for the remoter planets, about opening before us; for nature is minutely progressive, as well as continuously active, in her operations. Hence, within this planetary interval, we find the orbits of bodies termed Astroids — orbits which, at this recent period since their discovery, are considered as *eccentric;* nay, which some regard as the efforts of a dismembered planet, the dilapidated fragments of whose former magnificence, are thus circumvolving about; but which orbits science may hereafter discover as forming parts of their own native system; for there are no dilapidated fragments in omniscient works, and each planetary body must, *to exist*, be of entire planetary conformation.

Accordingly, after passing the regions of the astroids, we find renovation concentrated within *miniature similitudes* of our solar system,—and invigoration derived within each of them, from the action and reaction of their component members. In other words, we find within each of *three* such distinct *miniature similitudes*, a mighty orb, of inconceivable lightness in porosity, but of an immensity of *bulk* befitting the action of a primary planet upon *very large* circulating satellites. We find, therefore, within each of these three miniature similitudes, a primary planet which, while imbibing renovation itself from the Sun, augments the activity of solar action by interchanges of elementary properties between itself,—the primary, and its circulating satellites; all such circulating bodies, equalling* the inferior solar planets in bulk, and some among them greatly surpassing them in it.

The first planet in sequence in these miniature similitudes, is Jupiter, 1,400 times larger than the Earth—of cork-like lightness in organization, and nearly cometary velocity in rotation: the grandest planet in our system, and the very antipodes of Mars: Jupiter being the most benign of our planets, and relying solely on *revolving moons* for extraneous compensation. The power of lunar compensatory action is, therefore, manifested in its fullest completeness in the splendour of Jupiter, through the reactions of his four moons.

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* Saturn's most distant satellite is by far the largest, and is probably not much inferior to Mars in size. (*Astronomy*, by Sir John Herschel, p. 298.)

We proceed in our compensatory researches, and we find, at an increased remoteness, another magnificent planet, the centre of the second in sequence of these miniature similitudes. Not of such magnitude as Jupiter, but possessing more elaborate mechanism.

We find Saturn encircled by seven moons; but at a solar distance, wherein no number of moons could concentrate solar rays efficient for compensatory remoteness. Saturn is, therefore, surrounded by an additional agency, though not one of fresh nature, being grounded on the refractional laws of Mars' atmospheric lens. This agency we find developing itself with the analogy pervading all nature's operations, by inducing the greatest possible concentration of solar rays upon a remote planet by two *encircling rings*, upon the same mechanical principle, whence a double *row of petals* concentrate solar rays upon a daisy, within our own medium planet. Both concentrations being equally framed for inducing solar action upon the relative discs,—with this difference, that two hemispheres are invigorated by the apparatus for solar rays upon the planet, and only one hemisphere by *that* for the flower.

We leave the superb planet of Saturn, with its combined lunar and annular compensations, and we remotely discern Herschel,—the third in sequence of these miniature similitudes.

From present inadequacy of optical science,* we only faintly discern it; but external apparatuses, indicative of provisional care, are efficiently perceptible to excite lively interest, grounded, as these apparatuses are, on the compensatory principle of Saturn's lunar and annular combinations, although evidently actuated by far grander mechanism, to meet Herschel's increased solar distance. Hence, although only six moons and one ring have hitherto been ascertained as encircling Herschel, more recent observations may authorize us to assume, that a superior number of moons, and an additional concentrator of light and heat, only await our own optical improvements for us to behold them. And thrice to be envied are the Earthite opticians of two or three hundred years hence, when Science shall unfold to this planet the annular and lunar glories of Herschel.

The following query may then be considered as meriting attention:—viz. whether the remote planet Herschel does not form a connective link between our own solar system, and *that* of another, or approximate sun (or central star)? That is, whether the action of our Sun upon Herschel's orbicular course and annular functions, is not strengthened by *that* of the sun (or central star) of an approximate system *upon his moons?* The vertical orbits of Herschel's *moons* form an interesting subject of speculation in this, our present ignorance, relative to his rotatory period; their perpendicularity being discordant to the orbits of all bodies in constant circulation within our system, and appearing irrelevant to the action of our Sun upon them. In fact, their orbits resemble the courses of some among the mightiest and most erratic of those comets which occasionally visit us; and which, by thus interlacing innumerable and widely remote systems within one common circulating medium, ally them all one with another. May not our far distant Herschel, and divers other remote planets, *assuredly to be discovered,* in like manner, though on a miniature scale, ally our own, with surrounding approximate solar systems?

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* This portion of the work was written several months ago: that is, before the authoress knew that Scotland's actual rival of the illustrious Galileo—her noble Earl of Rosse—was immortalizing his name, and conferring incalculable benefits on science by his stupendous optical discoveries.

In conformity with the above supposition, we may observe, 1st, that there is neither chasm nor anomaly in nature's works; and 2dly, that if Herschel's renovation depends exclusively upon our Sun, *Herschel's orbit* insulates the planetary bodies of our system (except through stellar vitalic interchanges) from all other communities of planetary bodies, causing, thereby, *a* CHASM foreign to the mutual reactions among themselves, of all other classes of bodies, and derogatory to the principle of universal reproductiveness through universality of elementary interchanges everywhere in activity; while the above lunar perpendicularities exhibit anomalies discordant with all other satellite operation within our system. But place Herschel in the station apparently designed for him,—consider him as one among many other far distant planetary bodies connecting our own with surrounding solar systems, and the orbicular perpendicularity of his moons changes its character. It then exhibits a radius for the recipiency of foreign solar rays, and bears some affinity with the minor eccentricities found in the astroidical orbits; and thus it forms a connective link that carries on nature's designs with their wonted unity of expansion.

According to this supposition, Herschel forms one among those still further planetary divergencies, which the optical science of future generations will discover as intertwining our own, with the elementary circulation of surrounding planetary systems.

CHAPTER XI.

SOLAR RAY AGENCY:—THE TWO DIVISIONS OF SOLAR RAY AGENCY: VIZ. MAGNETIC EMANATIONS, AND ELECTRIC EMANATIONS.—DIVERSITY IN THEIR RESPECTIVE ACTIONS.—HUMAN INTELLECT INCAPABLE OF COMPREHENDING THE QUALITY OF MINUTENESS.—GENERAL VIEW OF SOLAR RAY, OR ELECTRIC AGENCY, WITHIN OUR SOLAR SYSTEM.—ITS COMPREHENSIVENESS—ITS CEASELESSNESS—ITS MULTITUDINOUSNESS—ITS MINUTENESS—ITS PRECISION—ITS PROVISIONAL RENOVATION.—AFFINITY BETWEEN PLANETARY ORGANIZATIONS AND SOLAR RAY, OR ELECTRIC ACTION, UPON THEM.—SPECIFIC INSTANCE OF PROVISIONAL CARE IN THE CONSTRUCTION OF SATURN'S RINGS.—PROBABLE GENERAL SERENITY OF CLIMATE IN THE REMOTER, OR SUPERIOR PLANETS.

Having enumerated a portion of the organic diversities in our solar planets, fitting them for reception of light and heat from the impetuses of a common centre, we proceed to inquire into the propelling nature of that central action? It may then be seen that, from the above planetary diversities, (to say nothing of the circumvolving satellites, comets, &c.) either a distinct set of rays is propelled from the sun towards each planetary body,—a complication foreign to nature's general economy,—or else, that solar rays, being designed for action upon innumerable natures and mediums, concentrate *proportionate varieties* of elementary properties *within themselves*, thence to be systematically developed, according to the natures to be acted on.

We shall attempt an outline of solar ray agency, grounded on the latter hypothesis, notwithstanding inadequacy in human faculties to apprehend the relative qualities of distance and duration—still less those of magnitude, multitude, and *minuteness* —necessary to define any physical operation; and from which inadequacy, man can merely compass general views of nature's laws,—never penetrate within their functions. For example,—Man, from the relative circumferences of the solar orb as compared with those of our planets, together with calculations of the rates and periods at which cannon balls, light, sound, &c. &c. travel—has ideas somewhat expanded as to the remoteness and magnitude of his own Sun. But take Man beyond the limits of this, his modicum system,—place the distance of,—apparently,—the nearest star before his computation,—and immensity paralyzes his faculties.

Still worse does he fare as to multitude and *minuteness*. The quality of minuteness, man's *faculties cannot, in any fashion, comprehend.* His faculties cannot grasp an infinitesimal; it eludes his research; and yet an infinitesimal *can* be decomposed, and, therefore, is an *organic body,*—being *composed of parts,*—although the aggregation of those parts—the *infinitesimal*—escapes man's perception.

Man's unassisted faculties, therefore, cannot apprehend the quality of minuteness. And since multitude is constituted of minutenesses,—and those component minutenesses lie not within his apprehension,—so neither can he apprehend the quality of *multitude*.

As for instance, "Union is strength." The larger the union, the greater the strength; and the refulgent influence of our Sun is obtained through the concentrative action of his rays,—the greater the multítude of them, the stronger being the action. This sounds plausibly intelligible; but to attain distinct conception of this GROUND-WORK of solar power,—CONCENTRATION OF MINUTENESSES,—how shall we comprehend whereof *that concentration is compounded?* We may, by mental exertion, apprehend an accumulation of relative numbers, amounting to the million of men comprising Xerxes' army,—or may *fancy* we apprehend the magnificence of a multitude of stars. But a multitude of our own solar rays, of which we speak so familiarly, or even a thousand of them, what shall we do with them? We shall be lost in minutenesses, as we were before in immensity! Nay further.—Instead of a thousand solar rays, if we take a *single ray*, we shall be equally discomfited! A hundred years might not suffice to register its properties, still more to analyze them; their very enumeration lying beyond human calculation. This—their concentrative accumulation—comes, however, somewhat HOME *to our perceptions;* on the one hand, by *multiple fresh decompositions and recompositions* daily produced among gaseous qualities by MORE OR LESS PARTIAL *chemical decompositions,*—and on the other, by the *aggregation* of colours displayed on introducing a prism within a solar ray, each definite tint whereof, however minute in *optical* variety, as well as each fresh gaseous decomposition, however minute in *gaseous* affinity, possessing *equally their specific qualities,* and those being exclusively *their own.* As for the agglomerations of properties comprised within either each *separate tint,* or each gaseous decomposition, how unapproachable, save by their *effects,* are THEY by man!

From the rotation of the Sun around himself every twenty-five days, all his emanations are necessarily of ellipsical figure, more or less elongated in proportion to the magnitude of distance towards which they are individually propelled. These emanations comprehend, as we have seen, two classes:—magnetic emanations, allying our sun to the other stars, as treated on in the 8th chapter; and electric emanations, vivifying and propelling his own solar, or vassal planets; the subject of our present consideration. The *electric* emanations being of immeasurably compressed circulation in comparison with the magnetic, *their* ellipsical figure is perceptible to us;—while, from the vast distance even of the nearest star, *magnetic* emanations progress in *ellipsical elongations*, which fallaciously appear to us as of direct, or straightforward transit. But there is no chasm in nature. The magnetic emanations of shortest, and the electric emanations of greatest ellipsical elongations, are so geometrically defined, as to blend within one another, notwithstanding the marked distinctions of their properties. *This* is apparent during the transitions from the zodiacal purity of stellar magnetism, to the gorgeous beams of solar electricity, through which the Earth's inhabitants daily pass.

All emanations from our Sun are, in fact, *compendiums of elementary properties* infinite in variety; each component particle having been attracted by, or propelled towards our Sun in his effluxial interchanges with the stars in antipodes and intersectional relationship with himself; and these component particles, after undergoing the chemical decompositions and recompositions attending their conjoint passages around himself, (as before exemplified) becoming, thereby, *polarized* into fresh elementary combinations, and thence divided into magnetic or electric streams, according to their several polarities; the magnetic effluvia progressing along their relative stellaric ellipses in diffusion of stellar vitality, and the electric currents concentrating themselves around our Sun in maintenance of life, light, heat, and motion, throughout his particular planetary system.

The agency of solar rays consists in transfusing renovatory properties within organic bodies in various relationships with the Sun, and more or less dissimilar to one another; and in extracting from each of them proportional quantities in return.

For example; every organic body possesses its definite affinities towards certain among the manifold properties concentrated within solar rays. When the transits of those rays attain efficient nearness towards an organic body for polar action, the above affinities attract a portion of those particular properties from the rays towards the body: while, in return, the polarities of the rays extract counterbalancing quantities of over-wrought properties from the body.—These gradual elementary developments and interchanges constitute the renovatory nature of solar ray action, whether of the magnetic or electric kind; and hence, like the journey of a beneficent agent for the removal of evil, and the diffusion of good around a dependent province, the circuit of a solar ray is fraught with the benefits it successively unfolds; extracting morbid exuberances from, and infusing vitalic essences in their stead, within surrounding organizations, and bearing back to its source, the riches of its accumulated abstractions.

Accordingly, when polaric affinity in an organic body calls into action any one class of the properties concentrated within a single ray, a proportion of *that class* of properties is abstracted from all surrounding solar rays; these receiving in exchange an adequate portion of properties from the attractive body. And hence, a definite proportion of solar ray properties rushes from each specific aggregation of them towards the body thus calling them into polaric interchanges; and from the ineffable multitude of solar rays everywhere circulating, these countless proportional properties amalgamate into simultaneous and resistless impetuses; and large portions of every class of properties become extracted in succession, from every solar ray aggregation of them, by various surrounding organizations during its circuit, receiving counterbalancing quantities from each of them in return; while, in conformity with the laws of elective polarity, no class of properties obtains interchanges, except through corresponding polarities.

The unerring precision of solar ray courses insures this uniformity. By this precision, the intenseness of solar ray propellance compresses at its onset the effluxial properties of a solar ray into an impetus efficient for action upon a body of *Mercury's ponderous opacity.* This compression gradually relaxes on diminution of transit velocity, —and this velocity decreases in proportion to the progress of the ray from the Sun. Hence, its several properties gradually develop into capacity for elementary interchanges with, or of propellance upon, the remoter planets,—in accordance with the axiom of decrease in organic opacity, with increase of planetary distance.

For clearer apprehension of solar ray action, we will take, as relative instances, the organic densities of Mercury and Jupiter.

Such is the ponderous solidity of Mercury's organization, that the closest condensation of solar rays, and that in immediate propellance at their source—the Sun—is requisite to induce action upon his globe, comparatively small as is this planet: an affluxial condensation, which, if applied to a remoter,—consequently, a less solid body,—would derange its organization; and, if brought to bear upon the distant Jupiter, might whirl the cork-like lightness of his mighty bulk beyond its orbit. To render the agency of solar rays analogously beneficial to Mercury and Jupiter, the action of their agency must be modified; and hence we perceive the necessity of multiform properties being concentrated within agents, so diversified in operation, yet so analogously renovatory in effect, as are solar rays.

If doubt existed of the above compensatory mechanism of our solar system, a general survey of *that* of Saturn's ring might remove it. It is *not* the grandeur of Saturn's encircling rings, 19,024 miles as they are in breadth, and so finely equipoised, as at once to concentrate within themselves, and to condense upon their primary, the rays of the distant Sun; while, at the same time, they only obscure a portion of those rays from that primary so minute, as merely to form a narrow line of shade upon his globe during his summer seasons; it is not the *grandeur* of this apparatus, so familiarly known, so universally admired, that impels its introduction in this place; but it is to the elaborate *minuteness of design*, whereby the greatest possible accumulation of magnetic properties is compassed around this remote planet, towards which attention is here requested: an *elaborate minuteness*, which, when the stupendousness of its machinery is taken into account, rivals THAT of Paley's celebrated instance of the wasp's sting.

This augmentation in Saturn's magnetic properties, is obtained by *minute diversity* in the relative velocities of Saturn's globe and rings, in accordance with the laws of rotatory oscillation; whereby the production of the greatest quantity of elementary properties is obtained by the greatest diversity of interchanging mediums.

Saturn's globe revolves on its axis in 10 hours 16 minutes and 19 seconds. The interior surface of his nearest ring revolves in 10 hours 29 minutes and 16 seconds. "At first sight," (says an elementary work* we laid before the public four or five years back), "At first sight, perhaps, an inconsequential difference—but on reflection, displaying an instance of unapproachable mechanical perfection; because, let us observe, that from that *very minute* difference in velocity, the same portions of Saturn's globe, and of the internal surface of the double ring, cannot, by any conceivable calculation, be found presenting the same superficies, the one towards the other, during thousands of years.—Hence, a ceaseless diversity in magnetic polarity must arise, amounting to infinite."

Thus we find, in the mechanism of our solar system, a distinct organization in each of its planets for the reception of light and heat, graduated in precise accordance with increase of distance in the planet from the Sun;—namely, 1st. An increase of polar obliquity, for accumulation of solar rays.—2dly. A decrease of globular opacity, for facilitating their reception.—3dly. A decrease of orbicular rate of motion, for imbibing the largest portion possible of solar rays.—4thly. A remarkable increase of rotatory velocity, to accelerate the return of every portion of the planet's globe towards solar ray reception.—And 5thly. Distinct extraneous machineries, for solar condensation around the more widely remote planets.

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* Astronomy Familiarized, by Frances Barbara Burton, page 50.

On the other hand, we find, in those innumerable cooperatives, *solar rays*—complete compendiums of elementary effluvia, fitted for the renovation of similar organic bodies—each ray being compressed at onset by intenseness of propellance into a consolidation, analogous in power to the solidity of Mercury: and, as such, fitted for action upon his ponderous globe:—a consolidation which we find relaxing in proportion to the ray's transit from the Sun, and thence obtaining from its progress, greater aptitude for elementary transfusions and interchanges, with the more flexible and remoter planets. Nor should the lengthened intervals in the equinoxes of each planet be omitted, in enumerating compensations. These equinoxial intervals gradually augmenting, with increase of solar distance, from those of Mercury, which alternate every 44 of our days, and the frequency whereof, must keep his atmosphere in continual agitation, up to the interval of 42 and a fraction of our *years*, which intervenes between the spring and autumnal equinoxes of Herschel, in striking testimony of the ordinary serenity of his atmosphere.

With such compensatory affinities before us, we may confidently assume, that the quantum of solar action upon our planets increases in proportion to increased solar distances;—and, consequently, that our magnificent superior planets enjoy an illumination and temperature corresponding in brilliancy and salubrity, with the importance, in the scale of creation, of their august inhabitants: the graduated protracted intervals in their respective equinoxes, inducing a general serenity of climate, strongly contrasting with the tempestuous fluctuations of the inferior planets.*

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* Moses' account of the creation is, as before observed, confined to the production of this single planet, the Earth; and, consequently, comprises only one series of creative operations,—which, to suit the genius of his age, is allegorically defined. But every Hebrew scholar must be struck with the grandeur of the clause introducing this detail, together with the importance of the statement therein contained, of the *gaseous nature* of the Earth's originative matter, as being consonant with the hypothesis relative to *that* primeval nature which recent discoveries have induced. To appreciate fully the *depth* of this introductory passage, it must be studied in the original text—since no translation could do justice to its magnificence—its terseness, augmenting its sublimity. No collection of modern words could convey an idea of the profundity of *desolation* and *vacuity* expressed by the short Hebrew words תֹהוּ and וָבֹהוּ; and how unattainable the construction of the *six subsequent words has hitherto proved to be in English,* is apparent from the paucity of our present translation of them,—announcing, in the noblest terms, as these six subsequent words do, originally, the majesty of creative agency in *actual operation,* as follows:—

וְרוּחַ אֱלֹהִים מְרַחֶפֶת עַל פְּנֵי הַמָּיִם

The word וְרוּחַ, and above all, that of מְרַחֶפֶת, can never be too closely investigated. It merits the consideration of the learned world to have prizes instituted in every University throughout Europe, to obtain the clearest possible translation of that long, and anxiously contested word, מְרַחֶפֶת, for the enlightenment of present generations.

CHAPTER XII.

STELLAR MAGNETIC EMANATIONS.—THE ZODIACAL LIGHT.—ITS MAGNETIC QUALITIES.—ANALOGY BETWEEN THE LAWS REGULATING EACH DISTINCT SOLAR SYSTEM, AND THOSE GOVERNING THE UNIVERSE.—CONCLUSION.—CLOSE CONNEXION BETWEEN THE SCIENCES OF ASTRONOMY AND GEOLOGY.—CONDENSED SUMMARY OF PROOFS THEREOF.—HYPOTHESIS GROUNDED THEREON.—NO ACTUAL NORTH AND SOUTH DIVISIONS IN THE HEAVENS.

THE remarks immediately preceding, refer to the action of the solar or electric rays of our primary star, the Sun, within this, his immediate planetary system;—as did those comprised within the 8th chapter, to the stellar or magnetic emanations of our Sun.

But the practical difference between those mighty agencies, Electricity and Magnetism, may be ascertained by the inhabitants of the Earth's temperate latitudes, by the simple process of a little early rising.

From the immeasurable regions beyond the limits of electric circuit, which our Sun's *magnetic emanations* traverse towards the nearest stars, the ellipsical elongations of *magnetic* effluvia are considerably greater than those of *electric* emanations;—and thence these magnetic currents are daily visible within the temperate latitudes, previous to our Sun's electric effulgences.

At the morning's dawn, therefore, of a considerable portion of every year, as soon as a given portion of such latitudes regains an elevation sufficiently angular, their inhabitants come within visible contact with magnetic essences from our Sun, in progress towards the nearest stars;—and *at that moment*, the STELLARIC DIVISION of our Sun's operative grandeur, is beheld in full, and uncontaminated purity.

The progressive development of these effluxial phenomena, as daily exhibited during a large portion of the year, is very striking. At first, the efflux appears dull and confused, and is confined within the south-eastern division of the heavens; but, as the rotatory elevation of our globular position brings us more and more within its view, it progressively expands, and *whitens* and *whitens*: —and when our continued rotation at length carries us *within this ineffable efflux*, we find ourselves encompassed by a milky whiteness, unparalleled at any other portion of the day. Throughout this, our effluxial transit, we quaff,—in very truth, —THE ELIXIR OF LIFE,—redolent with an invigoration, beyond what courtly pomp, or scientific research can afford! This invigoration, while traversing the morning "*zodiacal light*,"—as it is called,—*all* experience, by a greater or less degree of vitalic exhilaration, according to their respective constitutions;—but, probably, few suspect, *being* *under magnetic action*, or that they are inhaling *stellaric essences* in transit from one of their immediate fountains, our Sun, towards far distant regions, therein to be intermingled with, and interchanged for, fresh renovatory essences; and thus entwining our Sun in cooperative agency with his compeer stars.

The difference in action upon human existences between these magnetic emanations, and ordinary solar rays, is obvious, when the uprising of our globular position brings us progressively within sight of solar splendours. We are *then* about quitting the *purity of magnetic emanations*, with their snowy whiteness so beautifully contrasting with the *gaudy hues* of *electric effulgences opening to our view*,—and are going to be immersed in the grosser medium of ordinary sun-shine. The buoyancy of our feelings evaporates; but magnetic invigoration has pervaded us, and its organic influence remains.

All who would either preserve, or improve health, should attend at *these*, the grand renovatory fountains of our planetary system;—their matchless streams lying open to all classes of existences. To ensure these *our attendances*, we Earthites, of the temperate latitudes, have no need either of distant journeys, or domestic derangements. If we only open the door of our individual domicile at the commencement of the zodiacal transit, and take a few turns, we shall imbibe its properties, not merely with our breath, but *throughout every pore of our construction*;—or, should such locomotion lie beyond our compass, we need only open the windows of our apartments to obtain proportional participation. In the latter case,—caution may perhaps begin with the smallest aperture, but progressive invigoration will shortly induce their entire expansion.

This zodiacal transit is dwelt on, because its *inhalement* is more conducive to healthful strength and spirits, than any *other medicinal* recipe;—and because it cannot be partaken of in equal perfection on every portion of the planet. The globular positions of latitudes corresponding with *our own*, only travel in their diurnal rotation about 700 miles an hour; and thence, their inhabitants, in traversing these salubrious effluxes, have *time* to enjoy their invigoration. But, near the equator, the superior velocity of 1,500 miles in the hour, at which the larger circumference at those regions revolves, plunges the inhabitants at once within solar rays.

It is true, that our globular position traverses a zodiacal section again in an evening, in its rotation *from* the Sun, without similar renovation to the Investigator,—whose momentary sensation,—if any, —may *then be* that of chillness. But this difference confirms the fact of the effluxial influence, by the contrariety of its action under dissimilar circumstances. When our Investigator traverses his zodiacal section in the morning, he, and his position, *meet the effluxial action;*—that is, are under the invigoration of *positive* magnetic polarity in direct transfusion upon them. In the evening, when he, and his position, again traverse a section of it, it is in an opposite direction. They are *then* leaving the zodiacal effluxes behind them;—they are turning *downwards, from* them. Consequently, *their* polarities, and those of effluxes then in action, are relatively *reversed.* Our Investigator is then under influence of NEGATIVE magnetic polarity. In the morning, his automatic functions instinctively *expand* for reception of *positive* magnetic vitality, and our Investigator unbuttons his coat. In the evening, his automatic functions instinctively *contract,* in counteraction of undue magnetic exhalations from his system, through the extraction of *negative* magnetic polarity; and our Investigator buttons *up* his coat. But, as positive polarity possesses more permanent influence than negative, the evening's discrepancy is out-balanced by the morning's invigoration.

CONCLUSION.

Thus the sciences of Geology and Astronomy offer corroborative evidences of mighty planetary revolutions.

Everything proclaims the present state of things not to have been immutable; but that changes, both vital and organic, have been wrought on this globe by determinate agencies. And what agencies more determinate can actuate revolutions within a rotatory body, than those whereby its motions are governed?

On the one hand, fossil remains afford evidence of the existence upon this globe, at an indefinite period, of a symmetrical organization, the immensity of whose scale surpasses present conception;—but which immensity was only commensurate with the wants of the actual inhabitants. The legends of every portion, wherein civilization has penetrated, testify the antecedent existence of gigantically fashioned races. How grovelling soever in present ignorance, or howsoever separated by distance, all regions *concur in this tradition.*

Renown was won by the earliest heroes of every known portion of this globe, through destruction of creatures, or monsters, beyond the resistance of their ordinary contemporaries. The gratitude of the most polished nations has handed down the fame of such heroes, by every possible monumental display; and the nomenclature of surrounding constellations and principal stars, register their beneficent prowesses, for the admiration of *man as a race.* Such reverberatory accordance in terrestrial and celestial evidence, must have originated *in distinctness of facts*:—and it has received confirmation from the grandeur of architectural masses, coeval with the earliest known epochs: masses whose consolidations would defy the union of present physical and mechanical forces to accomplish.

Since the deciphering of hieroglyphics, and the discovery of national records, facts have been ascertained, which prove a very early contraction in organic scales: and at a much more advanced period, the records of national modes, pursuits, and achievements, during the stages of rapidly progressive civilization throughout all known regions, display gradual contractions of scale, until diminished within their present limits.

On the other hand, Astronomy, in corroboration of these facts, demonstrates, that Vega,—the magnificent Vega,—was the Earth's north polar star 12,500 years back,—the Earth's pole then inclining five degrees from that star; and also, that during the last very nearly 12,000 years, the direction of that pole has gradually progressed, from the above

Vegal inclination, to its present direction towards the comparatively inert polar star, Ursa Minor: a progression which will continue till it attains half a degree towards that star; when the inclination of the pole will commence progressing from Ursa Minor, by the opposite circuit of the polar ellipses, towards Vega: which will again become the Earth's north polar star, in about 13,000 years.

Hence originates the following hypothesis; namely: —that periodic *analogy may exist between* the gigantic scale of organizations, constituting the fossil remains of remote epochs, and the polaric impetuses of Vega, when that important star,—as the Earth's north polar star,—diffuses its powerful vitalities throughout this planet.

The following summary of *cooperative astronomical and geological phenomena,* is placed before the reader in support of this hypothesis.

1st. The fact of a gigantic scale of organizations throughout this planet, at a remote period, requiring *polaric impetuses, of intensity far surpassing those* in present action upon it; with the cooperative fact, that the earth's north pole pointed to within five degrees towards Vega, the brightest and largest star in our north polar ellipses, 12,000 years ago.

2d. The fact of gradual contraction in the Earth's organic scales since the above gigantic existences, as manifested by their present scale; with the cooperative fact that the Earth's north pole has continued progressing during the last 12,000 years, from its inclination of only five degrees towards the splendid Vega, to its actual direction of 1¾ degree towards the dull small star, called Ursa Minor, SITUATED AT THE OPPOSITE EXTREMITY OF THE POLAR ELLIPSES.

3d. The fact, that the direction of the Earth's north pole, revolves around the Earth's north polar ellipses, once in every 25,868 years; with the cooperative fact, that the mighty influential star Vega, and the dull looking star Ursa Minor, are the north polar stars of the Earth, every alternate 12,500 years:—and, likewise, that the antipodes star of Vega, (Canis Major,) and the antipodes star of Ursa, (in Octans,) that is, the Earth's correspondingly south polar stars of every alternate 12,500 years, that these southern hemispheric stars, exhibit a dissimilarity of bulk, analogous to the relative proportions of Vega and Ursa.

4th. The fact of the undeviating action of the laws of rotatory oscillation throughout every operation of nature, (that is, of the alternate maximum and minimum impetuses invariably attending them,) is especially offered to the reader's consideration; with the corroborative fact, that the stations of Ursa Minor and Vega, with those of their respective antipodes stars, *are at the opposite extremities* of their *relative ellipses:* because, from no other positions in their polar ellipses, could those stars reciprocally maintain alternate maximum and minimum impetuses throughout the planet; while from the determinate relationships towards the Earth's planet, of *those ellipsical stations,* the above alternations are necessarily of interminable series.

Finally. We must remember that towards what part soever of space we direct attention, there are, in fact, no definite north or south portions of the heavens: north and south, being merely explanatory terms in reference to ourselves as Earthites,—and denoting generally, and for want of better ones, both the express position of the Earth towards the heavenly vault, and the relative positions of all other celestial bodies towards our planet. With reference, therefore, to ourselves, the terms north and south indicate the relative positions of other celestial bodies towards the Earth's planet; and in reference to the positions both of the Earth, and of the other celestial bodies towards the heavens, these terms hold equally good; since, according to our acceptation of them, whatsoever portion of the heavens is above the uppermost pole of a celestial body, constitutes its north portion of the heavens; and whichsoever portion of the heavens is beneath the undermost pole equally constitutes the south portion of the heavens, towards the celestial body. But with reference to the positions of the celestial bodies *collectively*, the terms north and south are full of confusion and contradiction.

From *relative diversities* in their *equipoises*, the multitude of celestial bodies, whose upper pole points towards what (relatively to ourselves) is east, south, and west, is greater than those whose upper poles point in the direction which we regard as north, the *Cardinal points* being mere conventional divisions, befitting our limited apprehensions. As for example:—The north pole of Venus points towards Aquarius, and the north pole of the Earth towards Ursa Minor:—that is, towards regions in the heavens above ninety degrees apart:—and yet each of those celestial regions constitutes the northern portion of the heavens, in relation to their respective planets.

Hence, in the STELLARIC CITIZENSHIP OF SPACE, the north and south divisions of the heavens are anywhere,—everywhere,—nowhere! and hence all stars are suns,—and all suns are stars!!!—Stars, mighty Cooperators—extracting—connecting—and everywhere propelling countless streams of magnetic vitality through the universal agency of Elective Polarity.

Above all things—as in reference to the primary object of these pages,—above all things, the geological inquirer must bear in mind the periodic resuscitations exercised by every planet's polar machinery; whereby magnetic currents are augmented—maintained—contracted—and periodically CHANGED,—in accordance with the epochs necessary for renovatory action, upon every planet's climates and organizations.

THE END.

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